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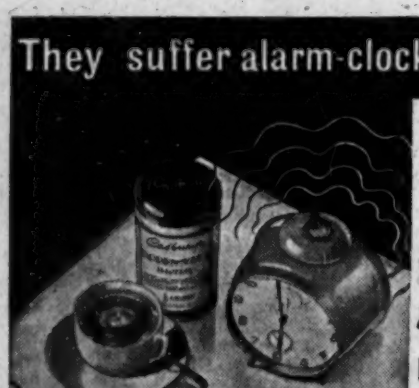

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 17 1942

BLOOD TRANSFUSION IN THE U.S.S.R.

BY

Prof. A. BAGDASAROV

Director of the Central Blood Transfusion Institute, Moscow

Blood transfusion cannot to-day be regarded merely as a substitute method of medical treatment. It should really be designated by the term "haemotherapy"—i.e., treatment with blood—as, in addition to the infusion of fresh blood, elements which stimulate and alter its reactions, mainly in a beneficial direction, are likewise introduced into the organism. This is usually followed by restoration of the functions of various diseased organs.

Blood is distinguished from all the tissues and organs by virtue of its extraordinarily wide range of functions. Besides its own life, it reflects in itself that of all the organs and systems. Not only does the blood distribute the oxygen it obtains from the lungs but it also serves as a universal medium in metabolism and carries within itself the products of nutrition and disassimilation. The chemical stimulators of vital processes, fragments of hormones, as well as catalysers—ferments and protective substances—are all concentrated in the blood. These factors are no doubt of fundamental significance in rendering blood transfusion one of the most effective measures known in medical practice.

Its Wide Application

The wide application of blood transfusion in the U.S.S.R. was preceded by research work by a number of Soviet scientists (among them, Academician A. A. Bogomoletz and Academician S. I. Spasokukotsky), who sought to establish the mechanical basis of the effect of blood transfusion and to determine indications and contraindications in applying this means of treatment.

The application of blood transfusion has greatly developed since 1926, when a special institution was founded in Moscow—the Central Institute for Blood Transfusion (I.P.K.)—under the auspices of the People's Commissariat for Health of the U.S.S.R. (Narkomzdrav); and parallel with this development there proceeded research work which resulted in the scientific establishment of several points touching upon this method. Blood transfusion is to-day performed in all medical institutions throughout the U.S.S.R., and the number of such transfusions has grown rapidly year by year. Whereas in 1935 the officially registered cases of blood transfusion numbered 22,000, by 1940 this figure had mounted to 200,000, excluding transfusions given on the Finnish front in that year.

With us, blood transfusion always had a definite ultimate aim—the utmost possible use of this prepotent medical treatment in wartime. And this urged us to solve the problem of organization, to train all physicians in the giving of blood transfusions, and to set up special institutes and stations—future blood-purveying depots—in all regional centres and large towns. This work has made great progress during recent years. Whereas in 1932 there were only about 80 such institutions in the U.S.S.R., by 1941 their number had reached 1,500; and, of course, there has been a corresponding growth in the number of donors. Soviet scientists, too, demonstrated their theoretical and practical achievements in the sphere of blood transfusion at the 1935 and 1937 International Congresses on Blood Transfusion.

Blood Conservation

At the outset blood transfusion in general practice was resorted to mainly as an emergency measure. There then arose the task of finding preservative agents which would allow blood to be conserved and retain its biological qualities for considerable periods of time. The solution of this problem facilitated the urgent transfusion of blood in times of peace, and particularly so in wartime. Nowadays we consider it an ordinary matter to ship conserved blood by aeroplane over distances of hundreds and even thousands of miles into the most distant corners of the tundra and taiga, and into the steppes and deserts of the south-east regions of the Soviet Union. No small number of human lives have already been saved, thanks to the speedy transportation of conserved blood by aeroplane to the front lines from far inland. And in this connexion the utility of various isothermic containers for shipping blood over long distances is worthy of special attention.

Hundreds of thousands of transfusions of conserved donors' blood have been made in the U.S.S.R., and this source ranks first among all sources of blood for transfusion. Only a few years ago conserved blood could be stored for not longer than 15 days, and under conditions of transportation, when the blood was subject to being shaken and jolted, this was reduced to 10 days. In recent years, however, great success has been attained in lengthening the period over which conserved blood can be kept: the addition of a small quantity of glucose to the sodium citrate solution substantially improves the storage properties. Blood conserved with a glucose-citrate solution can be successfully kept in a condition suitable for transfusion for 25 days, and for 20 days when transported. Experience in the war has shown transport by aeroplane to be the main, and the most preferable, method of shipping conserved blood to the front, even from distances of thousands of miles.

Soviet physicians have paid particular attention to designing appliances for taking blood and for the transfusion, storage, and shipping of conserved blood. Practice has shown that standard rectangular jars which fit into an isothermic container best answer the purpose of uniting in one vessel both the taking and the transfusion of blood; they are also very convenient for transport. These jars, which are produced on a mass scale, are placed inside the insulated containers, in which the blood keeps irrespective of external heat or cold. The ampoule type of appliance for blood transfusion is also eminently suited to the purpose, being easily portable and simple in use.

Utilization of the blood of "universal" donors acquires great significance under wartime conditions. Soviet scientists have accomplished a great deal of work in solving this problem. Without any complications whatever, massive doses of group O (IV) blood are now transfused to recipients of other groups who have lost a great deal of blood. And this is done actually at the front. Here the blood of universal donors is of particular value to active service medical stations, for there is often no opportunity for blood grouping.

Another matter of much importance for ensuring supplies of conserved blood at the front, and for its transfusion, is the efficient organization of stores of blood and their shipment. Our main supply base for conserved blood is the network of blood transfusion institutes and stations of the Narkomzdrav which have been established all over the country. When war broke out, many of these institutes and stations swiftly and efficiently readapted their work and became main bases for the mass purveyance of conserved donors' blood for dispatch

to the front and to hospitals in the rear. During twelve months of war literally hundreds of tons of blood have been thus applied to wounded men in all stages of evacuation, and with truly tremendous success.

Narkomzdrav regularly sends out groups of experienced specialists—scientific collaborators from the institutes and stations—who give practical assistance in ensuring the adequate supply of conserved blood at the front. Thus, thanks to timely blood transfusion, we can indeed say that hundreds of thousands of human lives have been saved.

The Plasma Method

The most diverse methods of haemotherapy have been extensively used—the drip method of blood transfusion, the transfusion of plasma and serum, immunotransfusion, the injection of small doses of blood of incompatible groups, and heterohaemotherapy. Among these the plasma method has a particularly wide scope in present wartime conditions. It is known that blood plasma is the main substratum of metabolism ; and its most striking feature is that, despite the constant inflow of matter and energy, its composition remains unaltered. Soviet scientists are in complete accord with the conclusions of British and American scientists that, as a medium impregnated with plastic substances and containing a large quantity of ferments exerting a haemostatic action on the organism, as well as a medium in which viscosity and osmotic pressure are almost at the same level as in whole blood, plasma beyond a doubt possesses unqualified advantages as a blood substitute.

With the object of establishing the most favourable conditions for preserving plasma over long periods we have had recourse to freezing it. As did M. Struma and S. M'Graw in their investigations, the Central Institute for Blood Transfusion has found that when plasma is frozen and afterwards quickly thawed at a temperature of 37° C.—immediately preceding transfusion or a short while before—it preserves intact such labile elements as prothrombin, fibrinogen, and complement. Recently we have introduced into practice desiccated plasma and serum preparations. Under front-line conditions plasma finds wide scope as a highly active haemostatic agent in cases of protracted loss of blood in which the transfusion of massive doses of blood is contraindicated. As a substitute for blood, plasma is employed in cases of shock accompanied by a moderate blood loss, when the organism still retains an adequate reserve of erythrocytes. In cases of burns we have found plasma of great service. When introduced in large volume, following heavy loss of blood, it usually has a most striking detoxicating effect. We employ various balanced physiological solutions for preserving the erythrocyte mass remaining after the plasma has been separated. We have recently been using the following solution: $MgSO_4$, 0.04 gr. ; KCl, 0.2 gr. ; NaCl, 8.5 gr. per litre of double-distilled water. It has been termed the modified I.P.K. fluid.* This fluid is mixed with the erythrocyte mass in different ratios. After the plasma has been separated from them and replaced with the modified I.P.K. fluid, the conserved blood erythrocytes are preserved in an external temperature of 4° to 6° C. Under these conditions they show no marked change up to 12 days, including the day the blood was taken from the donor. The transfusion of conserved blood erythrocytes containing this plasma substitute was found most effective in those cases of anaemia in which the aim of medical treatment is preferably to obtain a substitutive effect—that is, cases of much loss of blood, regenerative forms of post-haemorrhagic anaemia, etc. Naturally, the erythrocyte mass method is of service mainly in hospitals situated not far from the institute or station preparing these erythrocytes.

Plasma Substitutes.—The wide application of blood transfusion in the U.S.S.R. and the generous manner in which donors give blood for the needs of the Army and civil medical institutions have not relegated the question of blood substitutes, or, rather, plasma substitutes, that can be employed in all cases in which the main object is that of augmenting the volume of circulating blood. From our point of view, any physiological solution containing only salt ingredients, without colloids to maintain the viscosity and osmotic pressure of the solution on a level approaching that of plasma, is useless as such a substitute. Balanced solutions containing a small volume of blood or plasma have recently been finding a practical use as isotonic fluids with a natural colloid. Other solutions also serving this end are those in which the colloidal properties are ensured by adding casein that has been specially processed, with the object of eliminating the antigenic properties inherent in this preparation. The complicated circumstances existing in the front line sometimes preclude the possibility of utilizing conserved blood within its period of serviceability, and these are the conditions under which plasma, as well as synthesized substitutes for the latter, is of chief use. From a fairly wide experience we may draw the conclusion that in cases of acute loss of blood and shock, when infusion of plasma substitutes is carried out in conjunction with haemotherapy, a favourable influence on the condition of the patients' haemodynamics is usually obtained by the use of small doses of blood or plasma.

Side by side with colloidal substitutes for plasma we have recently introduced on a wide scale so-called physiological balanced solutions containing alcohol and glucose. These solutions, which mainly reinforce the vital processes, are administered in cases in which the wounded patient suffers from disturbed haemodynamics not associated with heavy blood loss, and also in septic cases.

It is no matter for surprise that since the outbreak of war a tremendous number of Soviet patriots have streamed into the numerous blood transfusion institutes and stations. From early morning till late at night these institutions seethe with activity. New donors undergo medical examination, their blood groups are checked, blood is taken and conserved, and jars and ampoules are packed for urgent dispatch to the front. And these donors are not only the donors—so to say, "cadre" donors—who used to give blood for transfusion before the war. They largely consist of the huge number of those who declared their desire to give blood for transfusion to the wounded when necessity arose. This great army is held in reserve, and at the very first call they flock to the transfusion centres to give their blood. And this reserve army has been augmented to-day by a great number of people in all walks of life. Even the briefest of informative talks on the important part which blood transfusion and the donor play in the Soviet army medical services suffices to bring to the institutes and stations groups of workers, students, militiamen, housewives, and the wives of those on active service, expressly to join the ranks of donors.

* I.P.K.—initial letters of the Russian for "Blood Transfusion Institute."

COMMENTS ON AN EPIDEMIC OF HEPATITIS

BY

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The hospital in which the epidemic occurred was formed in Sept., 1939, and has catered for up to 120 children at a time, as well as for a variable number of adults. The children have been nursed mainly by children's nurses in training, and these young women have been chiefly affected.

History of the Outbreak

In March, 1940, a nurse became jaundiced (Table I), and a second case occurred 35 days later. Shortly afterwards 2 nurses were transferred from another hospital, where the infection was rife, and they soon developed the illness. In August another nurse was affected, and in October another. Thus in 7 months 4 nurses probably acquired the disease in the hospital, and this epidemic period was followed by an outbreak in one ward affecting in a month 5 children and 5 nurses who worked in that ward, while 2 nurses and a ward-maid were probably infected in the nurses' sick-rooms. The outbreak later declined, but during the final 17 months' observation a further 8 children and 30 nurses became jaundiced. Ten children who had acquired the disease elsewhere were also admitted during this time.

Table I shows the ramifications of the epidemic. From its study certain features may be picked out for comment.

TABLE I.—*Cases of Infectious Jaundice in Hospital between Oct., 1939, and June, 1942*

No.	Nurse or Child	Where Probably Infected	Where at Onset	Where Nursed when Ill	Date of Onset	Date of Jaundice	Remarks
1	Nurse	?	C2	N.S.R.	21/3/40	25/3/40	
2	,,	C2	C1	N.S.R.	25/4/40	29/4/40	
3	,,	Away	C4	N.S.R.	6/5/40		
4	,,	Away	C1	N.S.R.	16/5/40		
5	,,	?	C3	N.S.R.	19/8/40	19/9/40	
6	,,	C3	C3	N.S.R.	22/10/40	24/10/40	
7	Child	C4	C4	C4	18/12/40	27/12/40	
8	,,	C4	C4	C4	20/12/40	22/12/40	
9	Nurse	C4	C4	N.S.R.	28/12/40	2/1/41	
10	,,	C4	C3	Away	29/12/40	29/12/40	
11	,,	C4	C4	N.S.R.	30/12/40	8/1/41	
12	Child	C4	C4	C4	7/1/41	12/1/41	
13	Nurse	C4	C4	N.S.R.	8/1/41	8/1/41	
14	Child	C4	C4	C4	8/1/41	12/1/41	
15	Ward maid	N.S.R.	C3	Away	9/1/41	9/1/41	
16	Nurse	N.S.R.	Away	Away	11/1/41		
17	,,	C4	Away	Away	11/1/41		
18	,,	N.S.R.	Away	Away	12/1/41		
19	Child	C4	C4	C4	16/1/41	20/1/41	
20	Nurse	N.S.R. or M.	Away	Away	20/1/41		
21	,,	? M.	Away	Away	24/1/41	30/1/41	
22	Child	Away	Away	C4	10/1/41		Admitted 24/1/41
23	Nurse	C4	C1	Away	2/2/41		
24	,,	C3	C5	N.S.R.	17/3/41	25/3/41	
25	,,	C4	C4	N.S.R.	26/3/41	2/4/41	
26	Child	C5	C5	C5	26/4/41	2/5/41	
27	,,	C5	C5	C5	1/5/41	6/5/41	
28	Nurse	C5	C5	Away	3/5/41	4/5/41	
29	Child	C5	C5	C5	4/5/41	5/5/41	
30	,,	C5	C5	C5	6/5/41	6/5/41	
31	Nurse	C3	Away	Away	26/5/41	2/6/41	
32	,,	C3	C4	Away	30/5/41	30/5/41	
33	,,	C3	C4, C1	N.S.R.	4/6/41	7/6/41	
34	,,	?	C3	N.S.R.	8/6/41	13/6/41	
35	,,	C3	C3	N.S.R.	10/6/41	13/6/41	
36	,,	C3	C3	C3	14/6/41	14/6/41	
37	,,	C3	C3	N.S.R.	17/6/41	17/6/41	
38	Sister	N.S.R.	Away	Away	7/7/41		
39	Child	Away	Away	C4	20/7/41	21/7/41	Admitted 24/7/41
40	M'scuse	?	?	N.S.R.	23/7/41	28/7/41	
41	Nurse	N.S.R., C4, or A1	A1	N.S.R.	28/7/41		N.S.R.8–28/5/41 C4 3/6–3/7/41 A1 4–29/7/41
42	,,	?	C4	Away	2/8/41	5/8/41	
43	,,	C4	Away	Away	?11/8/41		
44	Child	Away	Away	C3	21/8/41	21/8/41	Admitted 27/8/41
45	,,	Away	Away	C2	25/8/41	26/8/41	Admitted 27/8/41
46	,,	C4	C4	C4	1/9/41	4/9/41	
47	,,	? Away	C4	C4	7/9/41	12/9/41	Admitted 6/8/41
48	Nurse	C4	C2	N.S.R.	11/9/41	12/9/41	
49	Child	Away	Away	C3	?		Admitted 16/9/41
50	,,	Away	Away	C2	?		Admitted 16/9/41
51	Nurse	N.S.R.	C3	N.S.R.	18/9/41		Nursed Case 41
52	Child	C4	C4	C4	23/9/41	30/9/41	
53	Nurse	C3	C3	N.S.R.	26/9/41	29/9/41	
54	Child	Away	C4	C4	29/10/41	29/10/41	
55	Nurse	C4	N.S.R.	Away	14/12/41	19/12/41	
56	,,	C3	C3	N.S.R.	15/12/41	20/12/41	
57	,,	N.S.R.	M.	N.S.R.	18/1/42	18/1/42	
58	,,	? C5 ? Away	C5	A6	? 8/3/42	13/3/42	
59	Child	Away	C2	C2	?	10/3/42	Admitted 24/2/42
60	Nurse	? C5	C5	A6	4/5/42	6/5/42	
61	Child	Away	C2	C2	?	28/3/42	Admitted 18/2/42
62	Nurse	C2	C2	A6	11/4/42	18/4/42	
63	,,	? A6 ? C4	C4	A6	4/5/42	6/5/42	C4 17/2–17/4/42. A6 6–15/2/42, and from 17/4/42
64	Child	C4	C4	C4	11/5/42	18/5/42	
65	Nurse	C4	Away	Away	4/6/42		

C1, C2, C3, C4, and C5 are children's wards. M. is the maternity ward. A1 and A6 are adult medical wards. N.S.R. means nurses' sick-rooms (attached to C3). "Away" means outside the hospital.

The endemic stage, in which single cases appeared at intervals of 1, 2, and 3 months, shows that infection was smouldering in the hospital for some time before conditions were ripe for an epidemic. It suggests, too, that the incubation period varies widely and may be longer than 3 months, that there are carriers, or that subclinical infection may occur.

Subclinical infection here means infection without jaundice, but not necessarily without symptoms. No proof of the existence of such infection was found, but several observations suggest that it does exist. No direct source of the outbreak in ward C4 was discovered, but a nurse in that ward had an attack of frequent vomiting, without pyrexia, diarrhoea, or jaundice, on Dec. 1 and 2. She was admitted to a nurses' sick-room (attached to C3 ward). Jaundice followed in patients in C4 from Dec. 22 onwards, and in the sick-room attendants from Jan. 9.

Late in 1941 another nurse was in C4 when a boy developed jaundice for one day (Oct. 29). The nurse had an attack of severe vomiting for which she was "warded" from Nov. 21 to 28; she was nursed by patient No. 56, who was not in contact with any known patient with jaundice but who developed the disease on Dec. 15.

Young children usually have mild attacks, often consisting only of a pale stool or two, faint jaundice, bile in the urine for a day or so, and a rise of temperature to 99°–100°. It is easy to imagine yet milder attacks in which jaundice is not noticeable. For instance, a boy aged 2 in ward C5 seemed out of sorts and lost his appetite for one day. He passed one pale stool, but had no jaundice of conjunctiva or urine, and the occurrence would have attracted little notice if 4 children and a nurse had not developed hepatitis in that ward during the preceding 11 days. No one who reads Newman's (1942) persuasive paper is likely to doubt the existence of abortive cases. Cullinan (1939) has described a patient seen by A. W. Franklin who had biliuria in the morning but not in the afternoon. Case 54 had only a trace of jaundice of the conjunctiva, and had biliuria for one day.

Incidence of Hepatitis

That age affects the development of hepatitis even in children is a clinical impression: children from 1 to 4 years old seem to have brief mild attacks with slight jaundice, and often negligible prodromata. Table II bears out the contention that

TABLE II.—*Age of Children admitted to Hospital, and Number getting Jaundice, between April 25, 1940, and May 31, 1942*

Age in Years	No. of Admissions		No. with Jaundice	
0	243		0	
1	181		1	
2	150	921	0	2
3	158		0	
4	189		1	
5	152		2	
6	133		1	
7	118		3	
8	93		1	
9	118	980	0	11
10	98		1	
11	94		1	
12	76		2	
13	76		0	
14	22		0	

young children are relatively insusceptible. Babies are almost immune, though instances have been recorded (Cockayne, 1912-13). It is notable, too, that junior nurses were more likely to acquire the infection than senior: many of the latter had already had attacks. The regulations which permit, and thus ensure, that girls training as sick children's nurses shall be younger than those doing general training are partly responsible for the prevalence of infectious fevers in children's hospitals.

Studies of the *seasonal incidence* (cf. Wallgren, 1930) show infectious hepatitis to be chiefly a disease of autumn and winter, though there are many exceptions. In the present

TABLE III.—*Quarterly Incidence of Cases of Jaundice developing in Hospital*

Year	Quarter	No. of Cases
1940	1st	1
	2nd	1
	3rd	1
	4th	6
1941	1st	13
	2nd	12
	3rd	10
	4th	2
1942	1st	2
	2nd	5

outbreak the epidemic wave developed in the winter and spring of 1940-1, but there was no second wave the following winter (Table III). The ventilation of the blacked-out wards at night

was better in the second than in the first winter, but this is probably irrelevant, for day and night nurses were affected in proportion to their numbers.

The Incubation Period

The incubation period has been variously estimated. Glover and Wilson (1931) and Glover (1939) considered that the abrupt character of the outbreak they studied suggested a short incubation period, probably of 3 to 4 days. The majority of recent authors favour a longer period, and the conclusions of Glover and Wilson have been criticized by Pickles (1939b). Booth (1928) put it at 20 to 40 days, Pickles (1939a) at 23 to 35 days in three outbreaks. Most calculations have been based on case-to-case intervals, and there are few records of single exposures. Booth (1928) records one which indicates an incubation period of 31 days. Newman (1942) had instances of 29, 30, and 31 days. In one of Bashford's (1934) adult patients the period was apparently only 8 to 10 days. Wallgren (1930) observed hepatitis 15, 21, 20 to 22, 22 to 25, 25 to 28, 23 to 29, 8 to 15, and 31 to 40 days after exposure. Pickles (1939b) has good examples of 27, 27, 28, 28, 29, 31, and 34 days.

A few observations were made in the present outbreak. Case 24 was "warded" on March 17 and became jaundiced 8 days later. Children in her ward developed the disease 40, 45, 48, and 50 days after the last contact with her, and another nurse in the ward developed hepatitis after 47 days. These are long periods, but no trace of an intermediate infection could be found, and to postulate one would merely substitute two unusually short periods for one unusually long one. Case 48 was exposed to infection 53 to 40 days before becoming ill, and not at any other time so far as was known. Case 57 was ill and was nursed by Case 56 (who developed hepatitis on Dec. 15) from Dec. 8 to 14, and developed jaundice on Jan. 18, an interval of 35 to 41 days. In Cases 2, 46, and 47 incubation took more than 34, 29, and 35 days respectively; in Case 53 less than 35 days; in Case 38 it was probably exactly 38 days.

It seems that infection usually takes about a month, but that longer or shorter periods are possible. The size of the infecting dose may well be important, as in enteric fever. There may also be differences between strains of the unidentified hepatotoxic agent; perhaps different routes of infection may also produce different incubation periods. Propert (1938) observed that jaundice developed 78 to 83 days after the injection of human serum which was probably contaminated with a virus causing hepatitis, and two contacts of the original patients developed jaundice two months later. This batch of serum produced cases elsewhere (MacNalty, 1938; Findlay, 1940). According to Findlay (1940), yellow fever vaccine, similarly contaminated, produced jaundice 2 to 3 months after injection.

Duration and Degree of Infectivity

The *duration of infectivity* is thought by Pickles (1939a, 1939b) to be short, chiefly because not all the susceptible members in a family epidemic develop jaundice in one batch after exposure, but instead become ill in succession at intervals of about a month. This curious sequence has been equally plausibly explained by Newman (1942), who postulates a phasic or intermittent susceptibility to the infection. Pickles has actually noted transmission 8 days before the development of symptoms, and on the fifth and seventh days of the disease. Bates (1936) suggested that infection could still be transmitted a month after jaundice appeared; but this is not a common experience, and other explanations of his observation are possible. The epidemic described here did not provide information about the limits of the infectious period, although it was clear that infection might be transmitted some time before jaundice showed—e.g., Case 24 infected 5 people on or before March 17, when she became ill, although she was not jaundiced until March 25.

The *degree of infectivity* is difficult to estimate, but a rough idea may be obtained from Table IV, in which the number of times a patient or a nurse developed an acute infectious fever in an apparently uninfected ward is compared with the number of times a secondary case followed the occurrence. It will be seen that in this computation (which does not include children admitted to hospital after jaundice had appeared or abortive cases) infectious jaundice occupies a middle position between the more and the less infectious fevers.

TABLE IV.—*Number of Times a Secondary Case followed the Development of an Infectious Disease in Four Similar Children's Wards*

Disease	No. of Times Infection introduced (A)	No. of Times a Secondary Case followed (B)	Index of Infectivity (B/A)
Chicken-pox	10	9	0·9
German measles	6	5	0·8
Mumps	5	3	0·6
Infectious jaundice	11	6	0·6
Whooping-cough	12	5	0·4
Scarlet fever	11	1	0·1

Pharyngitis without rash following scarlet fever and abortive hepatitis are not included.

Transmission of Infection

The mode of transmission of infection in this epidemic, as in most, appeared to be aerial, and perhaps also by contagion. The frequency with which nurses became infected by nursing patients is striking when compared with the rarity with which patients in bed infected other patients, and suggests the possibility of the acquisition of the virus from faeces or urine. This is certainly not the usual route, for patients may infect one another by close proximity in out-patient waiting-rooms (Graham, 1938; Cullinan, 1939; Barber, 1937). A head master infected some pupils by merely walking through the rooms they were in (Newman, 1942); a rent collector visited infected houses and was himself stricken (Nicol, 1942). In one curious case (No. 38 in Table I) a sister spent a day in the next room to a nurse who had just developed jaundice, and came down with it herself 38 days later. There was no direct communication between the rooms, but the two doors opened side by side into a common corridor, and the two patients were nursed by the same staff. Apparently contact need not be very close, although it undoubtedly usually is. Wider spacing in a hospital waiting-room has been followed by the ending of an outbreak (Barber, 1937).

Usually a direct communication can be traced from case to case, while at times an abortive case seems to be the cause. I doubt if healthy carriers played much (or any) part in this epidemic, although their existence has been suggested by Cockayne (1912-13) and Newman (1942).

Some Further Points

Relapse is uncommon, but has been recorded (Cockayne, 1912-13; Bates, 1936; Newman, 1942): I have seen it once, in a man aged 53. *Second attacks* are rare, but are mentioned by Findlay, Dunlop, and Brown (1931) and Newman (1942). *Convalescence* is long. Many non-medical people do not think "the yellow jaundice" is catching, nor do they realize that

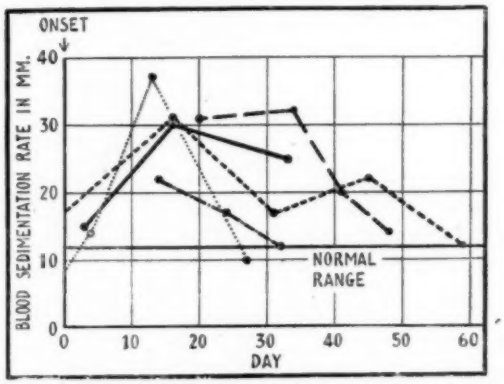

Chart showing the blood sedimentation rate (Payne's method) in 5 children who had mild attacks.

it may make a patient feel ill and exhausted for weeks. It is often treated as an "ambulant illness," but it is in fact an important cause of loss of health: few nurses at this hospital were well enough to work in as short a time as a month. Blood sedimentation rates may remain elevated for several weeks (see Chart).

Finally, the role of a children's hospital as a *reservoir of infection* is obvious. There is a long incubation period, and many nurses happened to be on holiday when they became ill, and thus carried infection into parts of Berkshire, Hampshire, Kent, Lancashire, Middlesex, Oxfordshire, Staffordshire, and Sussex. There seems no reason why the thread of infection should die out of the hospital while it exists in its present form, for its population is continually being refreshed by the influx of susceptible children and young nurses. If this should not be enough, another outbreak could be started by the admission of a patient incubating the disease—a fairly common event.

Summary

Infectious hepatitis became endemic in a hospital early in 1940, and in the following winter an epidemic started. It gradually subsided in the next year and a half, but the frequent introduction of young nurses and children into the community is likely to maintain the infection and form a reservoir from which the disease can be distributed to other places.

Infection is usually transmitted from case to case, but abortive cases are probably important links in the chain of infection.

Young children and senior nurses are less susceptible than older children and junior nurses.

The incubation period is usually about a month, but shorter and considerably longer periods are possible. The duration of infectivity is uncertain. Hepatitis is easily transmitted, but is probably less infectious than varicella or rubella.

The disease often produces several weeks of invalidism. The blood sedimentation rate may remain elevated for some weeks after a mild attack.

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IN-PATIENT TREATMENT OF CIVILIAN NEUROTIC CASUALTIES

REPORT ON 100 CASES TREATED IN AN E.M.S. NEUROSIS CENTRE

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The Emergency Medical Service is responsible for the care of civilian casualties. As a result of enemy action, particularly after the severe air raids in the autumn of 1940, some of the neurotic cases continued for a prolonged period to be unfit for work, and it was decided that specialized investigation was required to determine whether their condition was in fact due to "war injury" and whether they could be benefited by in-patient treatment at a neurosis hospital. Cases of long standing were therefore seen by a psychiatrist, and those suitable were offered in-patient treatment.

This paper is based on a study of the first hundred patients who passed through the hospital between July, 1941, when the scheme came into operation, and January, 1942. The total number referred was very little more, and as this hospital serves a large area, including London, there would appear to have been but few neurotic casualties in the country at that time. The paper is not intended to be a statistical one, but to point to factors of interest in the aetiology of the illness, and to the results of treatment.

The material investigated consisted of 70 men (of whom 20 came from Services such as Fire, Police, or Merchant Navy, the remainder being civilians) and 30 women, none of whom were in these Services. Their average age was 45 years, which is significantly higher than the average age of the usual patients attending practitioners at this period, and indicates that the special stresses fell more heavily on the older age groups. All had been closely exposed to bombing, which constituted the precipitating factor and which was followed by incapacity for work. They may therefore be considered in chronological periods before and after this incident.

Before the Incident

Family history may be disregarded, as, although information concerning neurosis or psychosis in close relatives was inquired for, a positive history was rarely obtained. Significant physical illness occurred in 11 instances. Among these were physical disorders such as cerebral arteriosclerosis and Parkinsonism now masquerading as neurotic illnesses. Other physical disorders, although contributing to the total picture, did not affect the prognosis of the neurosis. Definite neurotic illness had occurred in 13 patients and psychosis in 3. These figures are high for the general population but low for neurosis cases in pre-war practice, and would indicate that many, but not all, of the illnesses arose in people who do not easily break down. The diagnosis of the previous illness was not necessarily the same as the present one, hysteria being the only condition that recurred relatively often.

Personality characteristics of a kind which are usually regarded as predisposing to illness, such as "timid," "nervous," "worrying," "irritable," or "obsessional," and which were sufficiently marked to be apparent, occurred in 24. They coloured the content and contributed to the total picture of the illness, but they were not correlated with the diagnosis, and bore no relation to the outcome of the illness. Although it may be argued that predisposition could have been found in 100% if enough trouble had been taken, the fact remains that by ordinary standards a large proportion of these patients had had a good previous personality. This is one reason why the results of treatment were good. These cases are not comparable to the compensation neuroses of peacetime or to the soldiers who are unable to adapt to Army training; rather should they be compared to soldiers of good personality who broke down after such exceptional stress as Dunkirk and who tended to make a quick recovery in hospital. That a large number had stable personalities is confirmed by the fact that 90% of the men had steady work records, unlike the work histories so often obtained among peacetime neurotics.

In the period immediately preceding the incident 30 cases had been subjected to prolonged stress, beyond that of the average civilian, by virtue of their special occupations, including those in the Fire, Police, and A.R.P. services or in the Merchant Navy. Of these, 19 had begun to show symptoms but had not been off work. Nevertheless in these cases the results of treatment as regards symptoms were no different from the others.

The Precipitating Incident

The comparison with the Dunkirk cases is apt in that our patients were not those who broke down through a bomb merely dropping somewhere in the neighbourhood. On the contrary, 86 as a result of bombing had endured severe mental stress, such as loss of husband, wife, or children, loss of home or business, or being buried for hours. The severity of the incident is borne out by the fact that 50 sustained physical injury also, excluding minor bruising. It is interesting to note that among soldiers in the last war neurotic illness rarely coexisted with physical injury. Presumably anxiety in a soldier is relieved by a wound which will remove him from the battle area; but this does not happen to the bombed civilian, and other factors become more important.

Another common finding in these patients was that the majority had previously heard bombs exploding in the vicinity

without developing any more anxiety than is usual, but once they were actually blown up they tended to become afraid of a repetition of the experience. Feeling a bomb is quite different from hearing one.

After the Incident

It is well known that most of those who got acutely anxious, hysterical, or panic-stricken recovered in a short time—e.g., after a few hours in hospital—but in our group the average duration of incapacity before admission to hospital was 7 months. What, then, were the factors responsible for the persistence of symptoms?

In 39 cases a main factor appeared to be fear of fresh exposure to another severe experience. Many of the cases with previous neurotic breakdown occurred in this group, but it included others—e.g., a merchant sea-captain who had behaved in an exemplary fashion under attacks until actually sunk on one occasion, after which he could not bring himself to face the sea again. As one woman with a previously good record put it, "It is too much to bear; no one could be expected to stand it." In some of these a hysterical symptom maintained the patient's self-respect, as he believed he had been physically injured and there was no need to acknowledge fear.

Domestic and financial factors were important in 42 and the main factor in 17. Thus in many cases the loss of loved ones, home, possessions, and a lifetime's savings which might be represented by the house and its contents, proved too much against which to struggle: and understandable reactive depression carried on into a chronic depressive illness, the effort to make a fresh start proving too great. Such cases occurred especially among the more elderly patients; usually the form of illness was depression, but sometimes conversion hysteria coexisted or was the main symptom, and protected the patient from being called upon to make such an effort. Thus an elderly farmer whose wife had been killed and whose house, which he had built with his own hands, had been destroyed, developed a hysterical paralysis of the arm, which had only been bruised. The paralysis persisted until he had been brought to the point of really determining to start again.

Pensions considerations were important in only 13 cases. The usual attitude among these patients was one of resentment against the world, and they felt they were entitled to some compensation for their sufferings or to have security in the future. Although exaggeration of their experiences was especially common, only one of them could be considered a conscious out-and-out malingerer. In some instances the desire for compensation appeared to be motivated by loss of possessions or loss of self-respect, and could be met only by a pension for a hysterical illness masquerading as a physical injury.

Numerous other psychological considerations were responsible for the persistence of the illness in different cases. Thus in one case anxiety lest he be called up for the Army helped to maintain a neurotic illness after the physical injuries had healed; in another it was fear that he might have to go on with an unwanted engagement; in another it was guilt over the death of a friend whom he had not relieved at his post of duty at the proper time. Often it was a pre-existing problem that the illness helped to solve.

In 24 cases physical factors were considered to be of importance, and in 11 the final diagnosis was one of physical illness. These patients were sent into hospital for investigation, report on how far the illness had been caused or aggravated by the incident, and assessment of the permanent disability. Examples would be cases of cerebral arteriosclerosis, aggravation of Parkinsonism, or nerve injury.

Such factors as have been described were rarely single. A debilitating physical illness might coexist with domestic stress and fear of air raids in a complicated causal chain in which any such factor could be analysed into a result of some and a cause of others, but all had to be considered in treatment. A study of the factors concerned showed once again the minor importance of the actual blast in persistence of the illness. The bad cases prognostically were not those which had been the worst-bombed, but those in which some other factor such as pensions considerations or early senility played a major part.

Hospital Treatment

As has been pointed out, the diagnosis was often mixed, and cases could be considered under more than one heading. Taking the most important symptoms as criteria, they were classified as: anxiety states 37, hysteria 25, depression 22, physical 11, schizophrenia 2, left before fully investigated 3. Of these cases, one-third had left hospital by the end of a month, one-half by two months, and two-thirds by three months. The best results were obtained in those able to recover quickly enough to leave hospital in a short time. In view of the fact that these patients had been ill for an average of 7 months before admission to hospital, the period of hospital treatment required was short. When the cases were considered in two groups—one consisting of those who had been ill less than 7 months, and another of an equal number of those who had been ill more than 7 months—the results of treatment were numerically identical. This would suggest either that the illness had a natural period of recovery of some such length or that the cases had been awaiting specialized treatment such as a hospital could give them and could not recover without it. The evidence would appear to show that the latter was true in many instances, and would indicate that in the absence of other factors chronicity itself does not militate against recovery.

An attempt was made to determine how far the onset of the illness was wholly due to the precipitating incident. In 57 cases it was considered to be wholly attributable, and in a further 18 to be due to the incident but with previous predisposing personality characteristics not amounting to neurotic illness. The others were regarded as cases of neurotic relapse or aggravation of pre-existing physical illness.

The methods of treatment adopted were those ordinarily used in psychiatric practice. Persuasion, explanation, re-education, removal of symptoms by suggestion, occupational and physical therapy, were all employed in suitable cases, but the important feature in this group of patients was an assessment of the factors responsible for the persistence of the illness and the removal of these wherever practicable. Psychiatric social workers were freely employed in all their three main functions—namely, to obtain reliable information not available to the doctor, to advise and give aid in dealing with current problems, and to help patients on discharge.

The immediate results of treatment were considered in relation to symptoms (Table I) and to estimated capacity for work

TABLE I

	Recovered	Much Improved	Improved	No Change	Treatment Incomplete	Total
M. ..	12	19	23	13	3	70
F. ..	9	8	5	6	2	30
	21	27	28	19	5	100

(Table II). Under the first heading a case was classified as recovered if symptom-free on leaving hospital, irrespective of the possible effect of future stress. Under the second heading, "same work" is defined as work of the same socio-economic

TABLE II

	Same Work	Light Work	No Work	Unknown	Total
M. ..	32	22	13	3	70
F. ..	19	3	6	2	30
	51	25	19	5	100

level as before the illness, though not of necessity the same occupation. "Light work" refers to an occupation of less stress for the patient, though not necessarily physically lighter. Occasionally, to minimize risk of relapse, patients returned to work in a different locality, the classification then depending on the kind of work which they did. In most cases specific arrangements for return to work were made with the help of social workers and the Ministry of Labour before discharge from hospital.

Of the patients who showed no change, 2 suffered from schizophrenia and 5 from physical illness of a kind which could

not be expected to improve, leaving only 12 who were not benefited by treatment.

In the case of the women the figures often refer to estimated work capacity, as many had previously been employed in domestic duties only.

Follow-up

When those with irremediable organic and mental disease (e.g., cerebral arteriosclerosis and chronic schizophrenia) were excluded the immediate results were so surprisingly good for neurotic illnesses of such duration that it was felt desirable to follow up as many as possible. Practical difficulties allowed of this being done for only 29 patients, who were interviewed by a trained psychiatric social worker, and 7 about whom information was received from other sources. The average length of time between discharge from hospital and the follow-up was over 6 months.

The follow-up enabled the condition to be compared with that at time of discharge and the actual work record to be compared with that anticipated when leaving hospital. In both these respects the condition after this interval agreed very closely with the estimated prognosis. Of the 36 cases followed up, 26 corresponded exactly, 5 did somewhat better than anticipated, and 5 not so well. They appeared to be a fair sample of the whole, and if this is so the policy of arranging for specialized in-patient treatment of neurotic casualties would appear to be well justified by the results.

Summary

Investigation was made of 100 patients referred by the Ministry of Pensions because for a prolonged period they had been receiving "war injury" allowances for neurotic illness caused by enemy action. Over and above this total very few were referred. This suggests that the number of severe neurotic casualties in the country was small.

The average age was higher than the average age of other patients attending practitioners.

Judged by ordinary standards a large proportion had good personalities prior to the incident, which in most cases was severe.

Coincident physical injury did not prevent a neurotic illness, as it often does in soldiers on active service.

Feeling a bomb was a much more severe psychological trauma than hearing one.

The factors which prolonged the neurotic illness were numerous and had to be analysed in each instance. They were often unrelated to the war.

The bad cases prognostically were not those patients who had been most bombed, but those in which some other factor played an important part.

In spite of prolonged illness and allowances these patients responded quickly and satisfactorily to hospital treatment, unlike patients with compensation neuroses in peacetime.

76% were able to return to work of some kind.

A follow-up showed that the symptomatic recovery or improvement was maintained and that they were usually able to continue at the work to which they went when discharged.

Care of the feet is an important part of the medical services of the A.T.S. Certain foot complaints, due to different shoes, unaccustomed standing, and, in some instances, to drill, occur within a few weeks of enrolment, and regular examination is necessary if the feet are to be kept in a good condition and such disorders to receive early treatment. An appeal is therefore being made for women chiropodists up to the age of 43 (50 for ex-Service women) for the A.T.S. They will be sent to a basic training centre for one month and afterwards posted, with the rank of corporal, to A.T.S. groups or training centres and will receive pay at the rate of 3s. 8d. a day. They will be supplied with a complete set of instruments and all felts, pads, and lotions required for treatments. All chiropodists work under the direction of a medical officer, and cases which do not respond adequately to treatment are referred to an orthopaedic surgeon in a hospital. It is intended to have a corporal chiropodist for every 600 auxiliaries.

THE CURE OF SCABIES, AND A NEW REMEDY

BY

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The time required to destroy an acarus infestation may not be long enough to allow the structural disorganization of the epidermis caused by the parasite to have righted itself entirely by the end of the treatment period. A treated case of scabies may be free from acari—that is to say, cured of scabies—but need not present a skin entirely free from lesions. Immediately after successful treatment with any of the recognized remedies scratch marks and pin-head blood crusts, subsiding pustules, crusts, and scaly tags may still be seen on the abdomen, buttocks, thighs, and anterior axillary folds. Such residues are less pronounced after the use of ointment preparations than when the remedy has been employed in the form of a liquid to be painted on the skin. While the presence of lesions following treatment does not mean that the object has not been attained, the absence of itching may not indicate a cure, for this symptom may disappear temporarily in a case in which treatment has failed, only to return in about ten days, during which time the surviving parasites have increased sufficiently to cause symptoms. The discovery of live acari at the end of a period of treatment proves its failure at once, but failure to find the acarus immediately is no proof of cure. It can only be regarded as such if repeated examinations over a period of two weeks are negative. By this time, however, if cure is not complete, lesions and symptoms will have developed which will be visible to the naked eye and obvious to the patient, except in the very rare instances of latent scabies, if such a state exists.

Observation Period after Treatment

The majority of cases of scabies to which one or other of the known efficient remedies are adequately applied are cured, and in them no acari would be discovered. In a few uncured cases, and perhaps in a given series in all uncured cases, no acari might be found immediately after treatment, and a period of observation would be necessary to demonstrate their continued presence. Only in a very few cases can the discovery of acari immediately following treatment, and not the failure to demonstrate their presence, at once give the desired information as to the result. It follows, therefore, that only in an extremely small proportion of cases can the observation period be dispensed with if the result is to be established with certainty.

This observation period subsequent to treatment of scabies is necessary and of practical importance only when the value of a new drug is first being assessed. If it is then established that a drug in a definite concentration is capable of curing the disease when tested on a reasonable number of cases and following a definite routine, the criterion of cure, for practical purposes, when the drug is used in conditions where known new cases are numbered monthly by the thousand in a single community, is the efficiency with which the prescribed routine of application is carried out. In a large treatment centre it is not possible either to examine for acari closely enough for the examination to be of any practical value or to multiply visits by insisting on the period of observation. Apart from staff shortage, it is difficult to obtain regular attendance during the treatment period.

It cannot be asserted that the prescribed technique of treatment with any remedy is capable of success in every case, but failures following the correct application of sulphur ointment are extremely rare (Mellanby *et al.*, 1942). When the patient personally carries out the instructions the percentage of failures depends on his intelligence, home surroundings, and the care with which the instructions have been explained to him. A patient may reasonably be expected to be able to take a

teaspoonful of cough mixture three times daily, and failures in the technique of this procedure must be few indeed. Similar success in the carrying out of instructions is not met with in the treatment of scabies or, for that matter, in the treatment of skin disease in general.

Choice of Remedy

The technique of the commonly used remedies is more or less similar and the choice has up to the present been governed by cost, cleanliness, time, and freedom from irritant properties. It may be, however, that the availability of the remedy will become the deciding factor.

Sulphur is the oldest remedy for scabies, and according to Hebra its indirect use dates back to the cure of Naaman's presumed attack of the disease. Its outstanding worth as an agent lethal to the mites and eggs of the acarus has been demonstrated recently by Mellanby, Johnson, and Bartley (1942). It should be noted, however, that the standard treatment for scabies is not three applications of sulphur ointment as stated by them. Authors differ slightly in the technique advised. That laid down by Walker and Percival (1939) is six applications of 5% sulphur ointment over a period of three days, preceded and followed by a bath, no bath being taken during the period of application. Sulphur is cheap and can be incorporated in a more elegant base than lard or soft paraffin if so desired, but to be efficient it must be applied in the form of an ointment to be rubbed in. This necessary use of fats and oils in conjunction with sulphur at a time when these substances are in short supply justifies the trial of possible substitutes which do not require fats and oils in their application or which need a less amount.

Tetraethylthiuram Monosulphide

Another substance has recently suggested itself as possibly being of use. There is no reason to anticipate a shortage in its supply, and this fact alone should recommend its trial on a large scale. This substance is tetraethylthiuram monosulphide, and since 1940 I have used it in the treatment of human scabies. Because of unavoidable delays it has been employed in only a small number of cases. It was found to be non-irritant to the human skin when applied in the form of the pure powder, and no case of cutaneous idiosyncrasy to it has been encountered. It has proved curative in a strength of 5% in the form of a liquid preparation in 50 consecutive cases, 21 of which were treated as in-patients in the ward of the skin department of the Edinburgh Royal Infirmary, and 29 as out-patients at scabies treatment centres. Of 25 cases treated with a 0.25% solution 4 were cured; 1 case was treated with 5% tetraethylthiuram monosulphide in a vanishing cream and was cured; 3 were treated with a prepared tetraethylthiuram monosulphide powder mixed with water to form a paste, which was then smeared on the skin, and 1 was cured. The liquid preparation used was an emulsifiable oil having the composition: tetraethylthiuram monosulphide 25%, polyglycerol ricinoleate 10%, industrial methylated spirit 65%. One part of this oil was added to four parts of water immediately before use. While the 25% concentration remained stable at room temperature it tended to crystallize out if kept at lower temperature, but gentle heating sufficed to redissolve the crystals. Unfortunately the diluted oil separated, giving a layer of pasty consistency which did not redissolve. This necessitated preparing the required 5% dilution immediately before use. The 25% solution may stain material yellow, but this discoloration washes out easily. The mixture has a slight odour, not noticeable, however, in the 5% dilution.

The liquid preparation was rubbed over the whole body, with the exception of the head, face, and neck, twice daily for three days, as in the case of sulphur ointment. The duration of treatment is an important point in the cure of scabies with any remedy, and repetition reduces the possibility of inadequate application. If staffed by a trained personnel, the scabies treatment centre can be relied on to ensure at least one adequate application even if there are difficulties in enforcing the necessary return visits (Percival, 1941).

Observations by Gordon and Seaton (1941) on the lethal properties of tetraethylthiuram monosulphide for acari in animal scabies have shown that it is more toxic for the mites and eggs and more rapid in its action than either benzyl benzoate or dimethylthianthrene (mitigal). During their experiments they were also able to prove conclusively that mites, especially larvae, can migrate from their burrows and infect surrounding clothing, which is capable of reproducing the disease if applied to another animal. These experiments on the possible transmission of animal scabies cast some doubt on the advisability of omitting to disinfest clothing in the case of human scabies, a view originally advocated by Mellanby (1941), although later modified by him.

Summary

Tetraethylthiuram monosulphide in a concentration of 5% is capable of curing human scabies. So far it has been found to be non-irritant to the human skin, and no instance of cutaneous idiosyncrasy to it has been encountered. It is cheap, clean, easily available, and economizes in fats and oils. Its trial on a more extensive scale by independent observers is suggested.

The author thanks Imperial Chemical Industries (Pharmaceuticals) Ltd., Manchester, for preparations of tetraethylthiuram monosulphide.

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BENZYL BENZOATE IN TREATMENT OF SCABIES

A COMPARISON OF THE EFFECTS OF AQUEOUS AND SPIRIT EMULSIONS

BY

K. C. MALLEN, M.B.

Major, R.A.M.C.

At the request of the A.D.M.S. a series of cases of scabies was treated during a three-months period to ascertain the value of an aqueous emulsion of benzyl benzoate. During the previous 12 months many cases of scabies had been treated in this camp reception station by various methods, and it was evident that the benzyl benzoate one was the best.

The cases were not selected, every second admission being treated with the aqueous emulsion, regardless of the extent of the lesions present. The control group was treated with the spirit emulsion. The emulsions used contained equal parts of benzyl benzoate, soap, and spirit or water. The number of cases upon which these figures are based was 1,000, and the slight discrepancy in the final figure is due to the fact that benzyl benzoate was at times difficult to obtain. As a result more cases were treated with the spirit emulsion and a few with sodium thiosulphate and hydrochloric acid. The latter treatment was used to a considerable extent in the earlier part of the year, but was discontinued because of the number of cases of dermatitis that resulted.

Method

The number of beds available was 39; but at times room had to be found for more cases, and these were accommodated on stretchers. There were only two baths to be had, and these were in constant use for the bathing and scrubbing of the patients. During the three months under review the number of baths given averaged 25 per day.

On admission the patient's clothes were checked and sent to the pack store, where the articles, which included the bedding, were disinfested in a hot-air disinfestor of the Millbank type. The clothes were then stored away until the patient was ready for discharge. The patient was given a bath and scrubbed by an orderly, and was treated with either type of emulsion. He was then dressed in pyjamas and put to bed. On the following day he received the same treatment. On the third morning he was seen by the medical officer, and if there was no active lesion he was given a treatment of calamine lotion and discharged the next morning. In the cases in which there was a secondary infection, such as impetigo, he was transferred to the main block of the camp reception station for further treatment. These cases with another infection are

not included in this series. Some of the cases were not completely cleared by two baths, and these had to have a third application of the treatment; a few had four applications. The numbers, however, were very small: in 28 cases three baths were required, and in 3 cases four baths.

Owing to the possibility that dermatitis, present as the result of treatment, might persist, it was necessary to adopt some kind of follow-up, and the following form was forwarded to the regimental medical officer for completion seven days after the man's return to his unit.

SUBJECT: SCABIES "FOLLOW-UP"

To: M.O. i/c .....
Reg. No..... Name..... Rank.....
The a/m man was discharged from the Camp Reception Station, ..., on ....., having been treated for scabies. I should be very grateful if you would examine him on .... and return the attached proforma. It is recommended that one week's treatment of calamine lotion be given.

Lieut.-Col., R.A.M.C., O.C., Field Ambulance.

To: Camp Reception Station, ... Tel.....
.....
Name..... Number..... Rank.....
Condition of skin (is there any dermatitis?) .....
Is there any irritation? If so, where? .....
Do you consider there is any recurrence of scabies? ....
Date..... Signature.....

Excellent co-operation was given by the R.M.O.'s concerned, and in only a few instances was it necessary to send out reminders.

The following Table shows the numbers treated and the percentages of recurrences and incidence of dermatitis:

Treatment	No.	Cures	Recurrences	Dermatitis
Benzyl, meth.	527	519	8 (1·56%)	6 (1·2%)
Benzyl, aqueous	448	447	1 (0·24%)	14*(3·1%)
Thiosulph. + HCl	24	24	1 (4·0%)	1 (4·0%)

* 11 of these occurred at a time when it was impossible to obtain sapo moll. *B.P.*, so a brown soft soap issued by the O. i/c Barracks was used instead. This I think definitely contributed to the incidence of dermatitis. This soap was not used in the preparation of the spirit emulsion.

Conclusions and Summary

One thousand cases of scabies were treated, half with an aqueous and half with a spirit emulsion of benzyl benzoate. It would appear from the results that the aqueous is as efficient as the spirit emulsion. The advantages as regard cost are obvious.

The amount of dermatitis is slightly higher and the incidence of recurrence very much lower. There are a few general points worth noting about the cases sent in for treatment. The incidence of penile, abdominal, and thigh lesions is amazingly high—79%—and the fact that only one case had the lesion confined to the interdigital spaces bears out the theory that most people consider that the disease is due to close body contact. This is also borne out by the fact that the majority of these men gave a history of having returned from leave during the previous 7 or 8 days or admitted recent venereal contact.

K. Mellanby (*British Medical Journal*, 1941, **2**, 405) states that the possibility of the spread of scabies by means of blankets was very remote and that the spread by underclothes was possible under conditions which appear to offer the maximum chance of infection. It is hoped that these conclusions will be further tested, so that this point can be cleared up. If what he states is true then surely the amount of time, labour, and money spent on the disinfestation of clothes is useless.

I should like to thank all the medical officers who have helped in this investigation for their assistance, and also to pay tribute to the nursing orderlies whose work made the above results possible.

W. N. Warvi and R. W. Rawson (*Arch. int. Med.*, 1942, **69**, 90) record a case of torula meningitis in a man aged 39 in whom the characteristic symptoms were the insidious onset and the intermittent but progressive course, going on to a fatal termination. The increasing intracranial involvement caused the following symptoms: severe headache, visual, sensory, and motor disturbances; weakness; projectile vomiting; disorientation; coma; and respiratory failure. The case is the eighth reported example of the association of Hodgkin's disease with torula meningitis.

TREATMENT OF VARICOSE VEINS IN SOLDIERS

BY

ERIC L. FARQUHARSON, M.D., F.R.C.S.Ed.
Major, R.A.M.C.

The treatment of varicose veins by injections alone presents many difficulties when it is applied to military patients. In the first place, it is common for the affected veins to show the condition of *ectasia* rather than true varicosity, and veins of this type do not respond at all well to injection methods. Secondly, regular or systematic treatment is often quite impossible, owing to the continual movement of troops, re-postings, etc. A large proportion of soldiers reporting sick with varicose veins have had a few haphazard injections at irregular intervals; these may have had no effect whatsoever, or the benefit conferred was only temporary—a fact that has not escaped the soldier's notice and encourages him to distrust or to refuse further injection treatment.

Any form of operative treatment recommended must be considered in the light of its effect on the man's efficiency as a soldier, and precedence must be given to the method which is most likely to make him fit for full duty within the shortest possible time. Extensive radical excisions (Payne, 1941) have no place in the treatment of military patients. Apart from the long period of convalescence required, the scars which remain often form a basis for continued complaints.

The Trendelenburg operation, when it is not combined with injection, is frequently most disappointing. There may be little or no diminution in the size of the varices, or, alternatively, any improvement noted may be only temporary, as the affected veins dilate again, owing to the opening up of collateral anastomoses with the deeper channels. When combined with injection, the Trendelenburg operation has many advocates, and a 90% cure has been claimed (Oldham, 1941) for this method of treatment. Many workers, however, including the writer, have not been so successful in the results obtained, in that the thrombosis is apt to be incomplete and patchy in distribution. Furthermore, a formal Trendelenburg operation is not to be undertaken lightly, and there is no question that military patients must be admitted to hospital.

Subcutaneous Ligature combined with Injection

The accompanying photographs illustrate this method. In the case treated the varicosity involved the whole of the great saphenous system and had been present for 12 years. Complete thrombosis of all the dilated veins was obtained from one treatment.

In the method of subcutaneous ligature, a stitch is passed round the vein, and is tied over a swab placed on the skin surface. Except in cases where the varicosity extends right up to the saphenous opening (see below), the vein is ligatured *at its highest visible or palpable point.* This may be situated in the thigh (often at the junction of the upper and middle thirds) or at the medial side of the knee. In the former case a second ligature is applied at knee level. Very occasionally a third ligature is required.

An injection of sclerosing solution is made into the vein immediately below each ligature. The injected fluid takes effect in a "closed" and relatively small segment of vein, where the blood is almost completely stagnant and there is no dilution from backflow. As the result an effective thrombosis is invariably obtained.

Technique of Ligature.—The ligatures are most easily applied with the patient standing up. Silkworm-gut, threaded on a fairly fine curved skin needle, is employed. The needle is passed round the vein, transfixing the skin about 1/4 in. on each side of it, and the gut is tied over a small roll of gauze the thickness of a finger. A local anaesthetic is quite unnecessary.

Injection.—On the suggestion of Lieut.-Col. S. Sokolowski of the Polish Army Medical Corps, 20% saline solution has been used. This has the great advantage of being readily obtainable, and it has been most effective. Up to 50 c.cm. can safely be injected at one treatment, so that a widespread thrombosis can usually be obtained. Ten to 20 c.cm. is injected below each ligature, the amount depending upon the extent and varicosity of the veins under treatment. Cramping pain is felt in the limb about 15 seconds after injection; it may be fairly severe for 30 seconds, but usually passes off completely within 2 minutes.

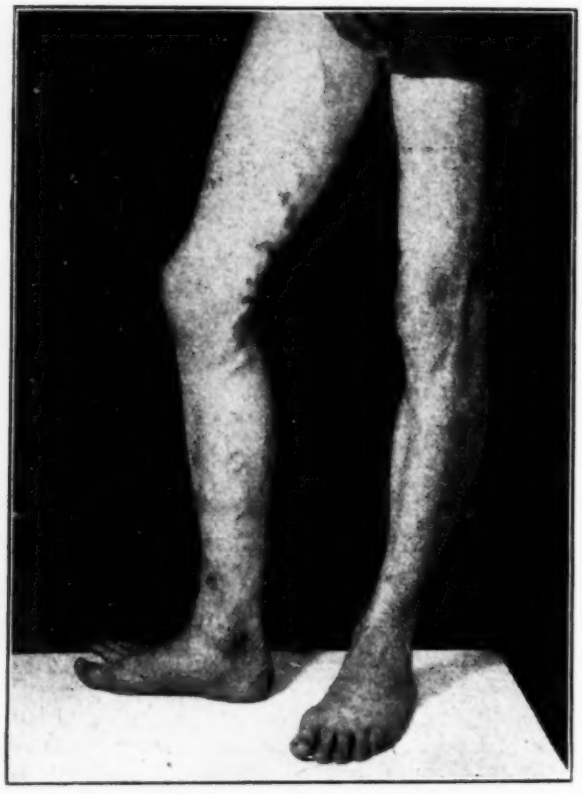

Fig. 1.—Showing the extent of the varicosity.

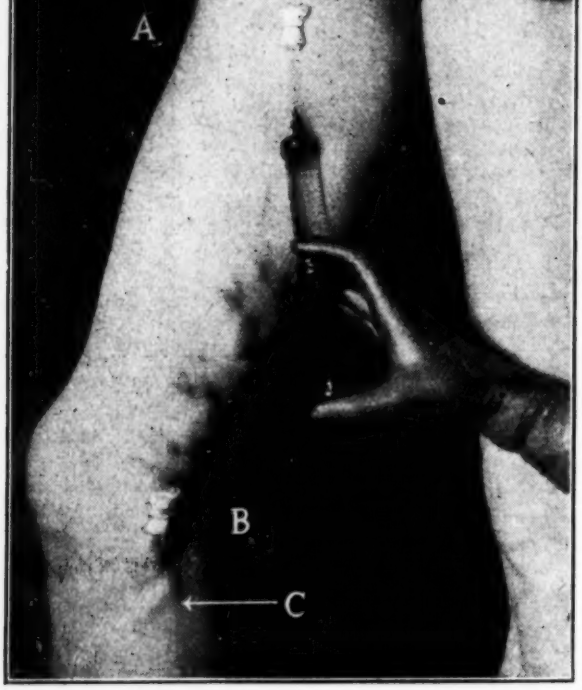

Fig. 2.—Subcutaneous ligatures at A and B. The first injection was given as shown, and the second at the point marked C. 20 c.cm. of 20% saline was injected in each situation.

If the dilatation extends right up to the saphenous opening, subcutaneous ligature is impracticable; an open ligature is therefore carried out, but no widespread dissection is attempted. The vein is exposed by a 1/2-in. incision at its highest point, and is divided. Ten to 20 c.cm. of saline solution is injected into the cut lower end before this is ligatured.

After-treatment.—The presence of the ligatures *in situ* causes comparatively little discomfort, and, considering the extent of the thrombosis produced, the reaction is not severe. It is customary, therefore, to return the patient to his unit, with a recommendation that he be excused all duties for 48 hours, and that he be kept on light duty until he reports back for removal of the ligatures in 7 days' time. Patients whose veins are very dilated are detained in hospital for one or two nights. During this time the limbs are firmly bandaged to compress the veins and to reduce the size of the ultimate thrombosis. Open ligature of the vein at the saphenous opening does not necessitate hospitalization provided that, in contrast to a formal Trendelenburg operation, it is done through a small incision and no extensive dissection is attempted. After removal of the ligatures a further period of light duty may be required, depending upon the reaction present, but most patients can return to full duty within two weeks of the original treatment.

Results of Treatment.—The immediate results are excellent. Of 150 soldiers treated by this method the great majority required only one treatment for each affected limb. About half the patients had two ligatures applied—one in the thigh and one at knee level. The rest, in whom the varicosity or ectasia did not extend above the knee, were treated by a single ligature at this level. As already stated, most of the patients returned to full duty within 2 weeks of the original treatment. The late results cannot at present be assessed, owing to the difficulties of follow-up in Service patients. It has not been possible to re-examine more than 30 patients, and these at intervals of from only 2 to 9 months after treatment. In these, however, the affected veins had all contracted down to hard slender cords, in which any possibility of re-canalization seemed to be quite out of the question.

Discussion

It is maintained that the method of subcutaneous ligature combined with injection is particularly suitable to the treatment of military patients, in whom injections alone are unsatisfactory and all forms of radical operation are contraindicated.

The method is not, of course, a new one (Russell, 1941; McCurrich, 1941), and I am aware that it has been extensively criticized (Eckhoff, 1941; McAusland, 1941; Schick, 1941; Oldham, 1941), mainly on the grounds that the saphenous vein cannot be ligatured at its highest point. Treatment by ligation at any lower level is stated (Schick, 1941) to be followed eventually by as high a percentage of recurrences as after simple injections alone, and it has suffered the sweeping condemnation (Oldham, 1941) that it is as futile as would be the removal of the distal half of a hernial sac. The first assertion is at least open to question; the second can be categorically denied. Complete thrombosis of *all* dilated veins in the great saphenous system can usually be obtained *at one treatment* by two well-placed ligatures with an injection below each. Most patients return to full duty within two weeks of treatment, and hospitalization is rarely necessary. No claims are made regarding the late results. Fresh varices may undoubtedly develop in the years to come, as they may with any form of treatment. It is suggested that this, like other post-war problems, does not require serious consideration at the present time.

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Medical Memoranda

Primary Cerebral Sinus Thrombosis

In view of the interest recently shown in this subject, especially in this *Journal* (see bibliography), the following non-puerperal case of "primary" cerebral sinus thrombosis seems to merit publication.

Case Report

The patient, a single woman aged 30, of asthenic build, was admitted to hospital suffering from restlessness and mental confusion. She had been in bed for 2 to 3 weeks at home with "bronchitis." Whilst in bed she developed left and, subsequently, right femoral thrombophlebitis. Mental symptoms were present during the last few days. There had been no vomiting and no previous illness. She had recently changed her occupation, and was depressed and "run down" owing to unhappiness at work.

On examination her condition was as follows: conscious but confused; headache severe; temperature 101°, pulse 106, respirations 28; slight residual swelling of ankles; no acute phlebitis; both knee-jerks slightly exaggerated; blood pressure 115/70; ears and fundi normal. Nothing else abnormal was observed in any system. Investigations on June 11, 1942, showed:—Lumbar puncture: pressure increased, Queckenstedt's test normal, C.S.F. examination normal in every respect. Nothing abnormal in urine. Non-protein nitrogen 26 mg. per 100 c.cm. Blood Wassermann reaction negative. Blood culture, coliform bacilli. All agglutination reactions negative. By June 15 she had developed a positive Kernig's sign, slight neck rigidity, and left extensor plantar response. Limb movements were apparently completely normal. Radiographs revealed skull and chest to be normal. A differential white count disclosed marked lymphocytosis. Pyrexia continued despite sulphonamide therapy. On June 17 lumbar puncture showed: pressure increased; C.S.F. contained numerous red cells, but otherwise was completely normal. Blood film, normal. Faeces, nothing abnormal.

The persistent normality of the majority of the investigations was puzzling, especially in view of the complete absence of any sign of paralysis or convulsions, but the possibility of thrombosis of the superior longitudinal sinus was entertained. The patient, however, became very considerably weaker and more drowsy, and she died on June 24.

Post-mortem Examination.—C.S.F. yellowish, not turbid; no evidence of meningitis; massive thrombosis of superior longitudinal and both lateral sinuses (apparently an aseptic thrombosis); bilateral thrombosis of superficial cerebral veins; no changes elsewhere in the brain; no necrosis, no hydrocephalus. The thromboses gave a definite impression of having originated in the superior longitudinal sinus, and of having spread thence to the lateral sinuses and to the superficial cerebral veins. Ears, nose, and throat, normal. Chest: purulent bronchitis, lungs normal. Abdomen: bilateral thromboses of common and external iliac veins, continuous with clot in both femoral veins: kidneys somewhat fibrosed; spleen normal; liver contained focal necroses. Bone marrow somewhat hypoplastic. Other organs normal.

Discussion

This case seems to bear out the interesting suggestion of Martin (1941), arising out of the work of Batson (1940): the possibility of "metastatic" thrombosis of the cerebral sinuses, via the vertebral veins, arising from the pelvic veins. Batson specifically mentions that this would be apt to occur during coughing—it is noteworthy that the initial complaint in this case was "bronchitis." The absence both of convulsions and of paralysis is distinctly unusual; this may perhaps conform to the impression gained at necropsy that the venous thrombosis developed subsequently to the superior longitudinal sinus thrombosis, possibly only immediately before death.

I should like to express my thanks to Dr. H. C. Haslam-Fox, medical superintendent, for permission to publish this case, and to Dr. R. Y. Dawbarn, who performed the necropsy, for the pathological reports.

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Reviews

WAR INJURIES OF THE CHEST

War Injuries of the Chest. Edited by H. Morriston Davies, M.Ch., F.R.C.S., and Robert Coope, M.D., F.R.C.P. (Pp. 131. 6s. plus 6d. postage.) Edinburgh: E. and S. Livingstone. 1942.

In the literature on war wounds in general there has been a gap covering the treatment of chest injuries which could only be filled, and that incompletely, by reference to scattered articles and papers. The editors of this book have attempted to remedy the situation and to produce a concise account of the treatment of chest injuries for the use of officers in the field and at casualty hospitals. In this they have partially succeeded.

The book is well arranged and begins with a useful account of the special anatomy, physiology, and pathology of chest injuries, but this is somewhat marred by inaccurate diagrams of the bronchial tree and the broncho-pulmonary segments. Later chapters are concerned with the treatment of special injuries and contain much that will be disputed by those who have had practical experience of chest casualties. For instance, the statement that "so long as a patient is in need of resuscitation he is not fit to be *x*-rayed" is not confirmed by experience, for an essential *x*-ray examination causes little disturbance if a portable machine is used. Again, the authors are unduly afraid of operating on a shocked patient and, in consequence, their indications for primary operation are too few; but experience has shown that with skilled anaesthesia and continuous resuscitation the patient's condition improves steadily during any operation which relieves his circulatory and respiratory embarrassment. The chapters on haemothorax leave much to be desired: few would agree that a sterile haemothorax should be washed out with saline, that a general anaesthetic is necessary for the first aspiration, or even that the aspiration of a haemothorax is "comparatively simple." No clear directions are given for the treatment of an infected haemothorax; instead a series of possibilities are presented which may confuse the inexperienced. The authors state that a blocked intercostal tube should be cleared by the injection of saline, without mentioning the danger of air embolism if the pleural space is at all rigid. They also advocate the use of atropine in the treatment of crush injuries and in pulmonary oedema, but in the former case it is dangerous owing to the production of sticky sputum while in the latter it is surely unphysiological. Finally there is a chapter on anaesthesia, which condemns nitrous oxide, although this gas is extensively used in chest surgery, and misrepresents the properties of trichlorethylene.

The great disadvantage of this book is that it fails to give dogmatic instructions. The medical officer dealing with chest casualties needs to be told as simply as possible what to do, and it is useless to present him with a number of alternatives unless the indications for each are given clearly and concisely. If these defects could be remedied in future editions this little book, which contains much useful information and which is a handy size for the pocket, would be a helpful companion to the casualty officer.

SCIENCE AND HUMANITY

The Values of Science to Humanity. By A. G. Tansley, F.R.S. The Herbert Spencer Lecture, Oxford University, June, 1942. (Pp. 31. 1s. 6d.) London: George Allen and Unwin. 1942.

Prof. A. G. Tansley's Herbert Spencer Lecture delivered on June 2 would have been approved by the sturdy individualist in whose honour the lecture was founded and, in these times, when the maxim *fas est ab hoste doceri* is reiterated with angry vehemence, brings to the discussion of a controversial topic a welcome urbanity. The concluding sentence of the lecture is the lecturer's inference from the evidence he has presented: "If we desire to keep alive and vigorous the ultimate springs of our material welfare, and—not less important—to maintain and extend the place of science in our culture, we must jealously guard its freedom and its independence."

Those who have emphasized the importance of scientific planning and organized research have, of course, many excuses for anger. It is only too obvious that few, if any, Ministers of State in this country know anything of science, pure or

applied. Recently a Minister answered the rhetorical question whether it would not be better to teach boys the principle of an internal combustion engine rather than the elements of Latin grammar, with the bland remark that it might be hoped that a boy who had studied Latin would be able to take knowledge of the internal combustion engine in his stride. Also the historical fact that down to the end of the 18th century most fundamental scientific discoveries were made by gifted amateurs is subject to Macaulay's reply to the complaint that 19th century women knew less Latin and Greek than Lady Jane Grey. If Lady Jane Grey had not read the classics what was there for her to read? In the 18th century scientific research could be the pursuit only of wealthy amateurs or of men with courage to endure privations.

But it remains true that it is no more possible to plan or organize the work of a Newton, a de Moivre, or a Helmholtz than that of a Wordsworth or a Beethoven; that when we recognize or even suspect the existence of original power in scientific research, nothing should be done to divert the inquirer from the train of thought or work to which his curiosity attracts him. A great palaeobotanist or pure mathematician contributes more to the stock of humanity than a second-rate engineer.

The medical profession recognized this more than a generation ago. Men still living remember the time when the teaching of what are now called the fundamental sciences was mainly technological. Now the laboratories of medical schools contribute as actively to the output of "pure" research as those in which no medical students at all are taught. No great change is a wholly unmixed benefit; some may hold that the movement has gone too far; but all would agree that the good has predominated over the evil.

Prof. Tansley remarks that the statement "curiosity is a sublimation of the desire for power" is "just psychological nonsense." Curiosity is a primary instinct and tends in common speech to be depreciated because of the secondary meaning—"inquisitiveness in reference to trifles or matters which do not concern one." There lies the danger. It is so very easy for the eminent A to believe that *his* curiosity is of service to humanity while B's curiosity is mere inquisitiveness, and so we reach within the circle of science that childish arrogance which inspired the Minister's remark concerning Latin mentioned above. Our profession will be alive to the danger.

ELECTROCARDIOGRAPHY

Essentials of Electrocardiography. For the Student and Practitioner of Medicine. By Richard Ashman, Ph.D., and Edgar Hull, M.D. Second edition. (Pp. 373. 21s.) New York and London: The Macmillan Company.

The second edition of *Essentials of Electrocardiography*, by Drs. R. Ashman and E. Hull, makes its appearance four years after the first publication. Most of the chapters have been rewritten and the volume is considerably enlarged. These changes and additions have resulted in the presentation of an up-to-date review of this branch of cardiology. For a volume which is not an exhaustive treatise there is perhaps undue emphasis on the physiological basis of the electrocardiogram; much of the third and fourth chapters will be outside the range of beginners in the subject and, indeed, of most general clinicians, and yet this book is specifically addressed to students and practitioners of medicine. The arrangement of the later sections of the book might be modified: discussions on the electrocardiogram in many and various non-cardiac maladies have been grouped together in three chapters on the electrocardiogram in diseases of the heart. More space might have been allocated to these aspects of the subject, since they represent an important part of the "growing edge" of electrocardiography. The bibliography must receive criticism: it is too sectional and not representative of the shares which have been contributed by many important sources to the sum of electrocardiographic knowledge. Much of the pioneer work has been done on the Continent, particularly on the metabolic background of cardiographic abnormalities; scarcely any references are made to these sources, while an unduly high proportion of the bibliography relates to American publications. Reproductions of 122 electrocardiograms show uniform excellence and they illustrate well the principles expounded in the text.

Notes on Books

There is much to be said for making the industrial worker aware of the general health problems in industry and for instructing him in elementary rules of hygiene, so that he may keep himself fit in both his own interests and those of the country. The same, of course, applies to other sections of the community, among whom on the whole there is a gross ignorance of rules of hygiene and no very great enthusiasm to apply what lessons have already been learnt. Nevertheless those who believe in health education must "plug" their story for all they are worth, hoping that in time a real health-consciousness in the public will be aroused. *Health of the War Worker*—a handbook prepared in co-operation with the Socialist Medical Association by the Labour Research Department (6, High Holborn, London, W.C.1; 6d.)—has one advantage in that the medical advice tendered is obviously that of someone who knows industry from the inside. The booklet acquaints the worker with those parts of the Factory Act relating to health, both personal and institutional. Nevertheless it is marred in places by an unpleasant nagging tone. The workers, for example, are frequently adjured not to be "put off by glib assurances," and there is one slightly comic distortion of fact when the writer says, in the section under heating, "fans are very plentifully distributed in West End clubs, but are much too rare in factories . . ." It is difficult to see how the puzzled worker will profit from a disquisition on the factory medical service, in which, he is told, "since doctors are liable to be called up for the armed services but not for industry, it is often the left-overs who find their way into factory jobs." And, again, to remark that the appointment of a doctor by the management "often leads to a feeling among the workers that the doctor is the management's 'yes-man,'" and to leave the worker without any assurance that this is in fact not the case, is hardly likely to help forward that co-operation between worker and doctor which the writer of this pamphlet considers to be desirable. In fact, if he had given a little more information about health and first aid and a little less space to airing his views the value of the pamphlet would have been much enhanced.

Der Eisenstoffwechsel und Seine Klinische Bedeutung, by A. Vannotti and A. Delachaux, is published at 12.50 Swiss francs by Benno Schwabe of Basle. This monograph on the metabolism of iron and its clinical significance is an account of the researches of the Lausanne School and a review of the literature. It has been carried out with the support of the J. Macy Jr. Foundation of New York and will be of special value to biochemists and haematologists who are engaged in the study of this difficult problem. The authors have used a more comprehensive technique than other workers, estimating the iron in the serum in four different fractions. They stress the high iron content of the nuclear chromatin, and relate this to the manufacture of haemoglobin in the erythroblasts, of myoglobin in the muscles, and of cytochrome, oxidase, and catalase in the parenchymatous cells. We are now well informed about anaemia of the blood due to deficiency of haemoglobin, but anaemia of the tissues and deficiency of cytochrome and myoglobin due to lack of iron constitute a further possibility. In this way some of the epithelial and neurological symptoms of anaemia may be better explained and correlated with the similar effects of avitaminosis.

Lewis's Medical and Scientific Lending Library has issued a new Supplement to its main Catalogue, covering the period 1938-41. It may be obtained from 136, Gower Street, W.C.1. The price is 4s. (to subscribers 2s.).

Preparations and Appliances

PREPARATIONS OF VITAMIN B_1

Vitamin B_1-Boots conforms to the specification for aneurine hydrochloride described in the *Third Addendum* to the *British Pharmacopoeia* and is identical with, and has the same biological activities as, the natural vitamin. Vitamin B_1 is specific in the treatment of beriberi and has been recommended for a wide variety of conditions, including alcoholic neuritis and nutritional neuritis. Partial deficiency is likely to occur in patients on special diets—e.g., a diet for gastric and duodenal ulcers, high carbohydrate diets employed in nephritis, and restricted diets for obesity. Conditions of increased metabolism such as pregnancy and lactation increase the requirement for this vitamin. Vitamin B_1-Boots is supplied in tablets of 1 or 3 mg. for administration by mouth, and as a sterile solution in ampoules containing 5 or 25 mg. for intramuscular injection in cases of achlorhydria associated with vitamin B_1 deficiency.

BRITISH MEDICAL JOURNAL
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PHYSIOLOGY OF THE VOCAL CORDS

The study of the manner in which the vocal cords act and move to produce the voice was first made possible by the introduction of the laryngeal mirror by Garcia in 1854. Dr. Thomas French of Brooklyn made a notable contribution to this study by photographing the vocal cords in action, and published his results in 1886 in a paper entitled "The Laryngeal Image Photographed during the Production of Tones in the Singing Voice." French noted that different individuals often employ different mechanisms in the production of the voice and that the appearances of the larynx in similar circumstances are often very different. Therefore no single description of the position of the vocal cords for the production of any given tone can apply to every larynx or even to the same larynx in varying circumstances. There is, however, a general scheme, in the study of which Dr. I. I. Pressman[1] has made further great advances by the application of ultra-slow-motion photography, the pictures being taken during phonation at the rate of 4,000 frames a second, which represents a slowing to 1 : 250 in the normal rate of vibration.

It is pointed out that two persons with exactly the same range and with voices strikingly similar are not likely to produce the same tone in exactly the same way. If one uses less expiratory force than the other in producing an exactly equivalent tone the diminished air pressure must be compensated by a closer approximation or increased tension of the vocal cords. It may be necessary to bring the posterior ends of the cords into contact for damping, which was not necessary for the person using a greater force of expired air. Equivalent tones are thus accompanied by a different laryngeal appearance in one as compared with another, and a particular laryngeal picture cannot be ascribed to the production of *any* given tone. Nevertheless certain changes take place as an ascent is made to its highest possible tone from the lowest which a particular larynx can produce. The cords are adducted by the crico-arytenoideus lateralis on either side, the antagonistic posticus muscles relaxing reciprocally. The closure is partial, leaving a broad longitudinal opening; the tension of the cords is not increased. Further closure is caused by contraction of the interarytenoid muscles, which slide the arytenoid cartilages together and close the posterior commissure. The vocal processes of the arytenoid cartilages, however, remain still splayed out and need further rotation for complete closure. This is performed by the thyro-arytenoideus muscles, which rotate the muscular processes inwards so that the vocal processes approximate, this movement completing the closure of the vocal cords with the exception of a chink remaining anteriorly. At the same time the tension of the cords is increased. Complete closure is produced by the action of the cricothyroid muscles, which, tilting the cricoid and thyroid cartilages in opposite directions, further increases the tension, closes the anterior chink, and elongates the cords. The moving-picture photographs of the larynx taken at the Bell Telephone Company Laboratories show this elongation quite clearly. To produce these effects both the arytenoid and cricoid cartilages must be fixed. The arytenoids are fixed against the cricoid by the crico-arytenoideus posticus muscles, so that the cords can become tense and elongated. The cricoid itself is fixed against the spinal column by the inferior constrictor of the pharynx. The anterior fixation of the thyroid cartilage to maintain the tension is accomplished by the cricothyroid muscles. The moving pictures show that, contrary to the older teaching, a preliminary complete adduction occurs before the vibratory movements in the cords are initiated. In this position of adduction fine intrinsic movements of the cords occur independently of any arytenoid movements. These are movements of segments of the cords as contrasted with movements of the whole cord and are produced by selected fibres of the thyro-arytenoideus muscles, which pull apart equal lengths of each cord against tension to establish a final glottic pattern in which the vibrations will take place.

Thus the final position assumed by the vocal cords in producing a tone, in preparation for vibration, is the product of two muscular forces, one of which causes adduction and tension, and the other counters this over a varying length of cord, exerting a damping effect. The lowest tone, not ordinarily in use, is produced by a general relaxation of the cords, which are foreshortened, leaving a relatively wide gap, which is not so wide or definitely triangular as in inspiration. This gap extends from the anterior commissure but is much wider behind. In the ascent of the scale there is a gradual transition in which the cords become straighter and more tense. As the cords elongate the tension increases and the edges of the cords lie almost parallel, and finally exactly parallel. When the cords have become as taut and elongated as possible, a break occurs and the damping process comes into action to yield still higher tones. A varying length of the posterior part of each cord is damped and prevented from vibrating by being brought into apposition with the corresponding part of its fellow. The anterior segment is then foreshortened functionally and a higher tone is produced, for only these portions anterior to the damped segments can vibrate. Finally, the cords approximate for so much of their length that the glottic chink is only a tiny orifice anteriorly.

On mirror examination the vocal cords seem to move from the lateral to the median adducted position as rigid bands, but the moving pictures show that this is not the case. The movement is undulating, beginning anteriorly and passing as a wave to the posterior segments; the anterior segments approximate first, followed by the middle and then the posterior segments. The air escaping under pressure between the cords everts the free margins of the cords, which spring back by their own elasticity, thus producing vibrations apart from any gross movements of adduction and abduction. The ultra-slow-motion pictures show that at a low pitch the vibrations of the cords are very complex, becoming less so as the pitch is raised. The cords become firmer and longer during the ascent of the scale. They open from below, the opening continuing upwards and outwards. Closure likewise begins from below, and as the cords open and close a ripple passes laterally over the upper surface. At extremely high pitches only the edges close to the glottis are seen to vibrate, and as the pitch rises the vibrations are confined more and more to a diminishing anterior segment, while the posterior segments remain firmly in contact. In whispering the sliding movement of the arytenoid cartilage on the cricoid towards the median line does not take place, because the interarytenoid muscles do not contract. A wide triangular gap is therefore left in the posterior part of the glottis, and a pronounced leak of air results. The anterior segments of the vocal cords act as in ordinary speech. If the pitch of the whisper is raised the anterior oral hiatus becomes

[1] *Arch. Otolaryng.*, Chicago, 1942, **35**, 355.

narrower and the cords touch at about the middle third, but the triangular chink posteriorly persists. This has a practical application, because it is apparent that whispering can be as harmful as shouting, for the vocal cords can meet and injure each other during whispering as well as during ordinary speech. Yet often whispering is allowed when ordinary speech is forbidden.

PASTEURIZATION OF MILK

Pasteurization began to be used on a commercial scale in the large towns of this country about the beginning of the present century. Its object was to improve the keeping quality of milk, not to prevent milk-borne disease. It consisted usually of heating milk quickly to about 170° F. and immediate cooling—the "flash" process—and its product had the characteristic flavour of heated milk and a diminished cream-line. From the aesthetic point of view, therefore, it was unattractive, and rapid souring was not uncommon as the result of defects in many commercial plants. It soon became evident, however, that milk submitted to even this imperfect process was more seldom associated with the occurrence of epidemics than raw milk. The processes were under no Government control, and the first moves made by the Ministry of Food in 1918 toward the encouragement of high-quality milk—apart from the rather ineffective measures exercised by local authorities under the Diseases of Animals Acts, Milk and Dairies Regulations, the Public Health Acts, the Infectious Disease (Prevention) Act, and various local powers—aimed at the sale of clean and tubercle-free raw milk under special licence. The farming interests, backed by such disinterested enthusiasts as the late Dr. Stenhouse Williams of the National Institute for Research in Dairying, Reading, were strongly opposed to any statutory recognition of pasteurized milk. Nevertheless, when the movement passed to the Ministry of Health, pasteurized milk was included as one of the special designations in the Milk and Dairies (Amendment) Act of 1922. By this time the more fool-proof methods of "retarding" and "holding" had come into vogue, and pasteurized milk not only was a more elegant product but also gave reasonable assurance of freedom from pathogenic micro-organisms. Still the bitter opposition of dairy farmers and their supporters continued, so that when the British Medical Association began an expensive advertising campaign a few years before the present war, advocating safe milk in the public interest, it had the greatest difficulty in overcoming the reluctance of the daily press to accept the advertisements. During the present war the operations of the Ministry of Food, the Ministry of Agriculture, and the Milk Marketing Board have removed the economic motive behind the opposition of farmers, and, for the present, pasteurization is being rapidly extended without controversy. Perhaps these or similar purchasing arrangements will survive the war, but if they do not it is possible that the resistance will be resumed.

This prolonged controversy has presented an outstanding example of the disingenuous manipulation of scientific discovery to support a losing cause, and it has not been easy for medical practitioners and others who believe in pasteurization to put their finger on the flaws in the pseudo-scientific arguments used against it, with which the farmers and legislators have been well primed. This difficulty no longer exists. A most complete compilation and analysis of our knowledge of milk, its composition, and the effects of heat on it has been made by Prof. G. S. Wilson.[1] The contentions that pasteurization reduces the nutritive value of milk, that it reduces resistance to disease, that it predisposes to dental caries, that it removes an immunizing influence by destroying bovine tubercle bacilli, that pasteurized milk is unpalatable, that pasteurization fails to destroy pathogenic micro-organisms, that it removes the incentive to produce clean milk or eradicate disease in herds, that milk may become infected after pasteurization, and that pasteurizing processes are uncontrolled, are fully dealt with. The examination of all reliable, and some unreliable, scientific work on the various aspects of the subject is exhaustive. The number of articles referred to in the text runs to 333, and many of the facts they record are very fully discussed and criticized. Among the diseases which may be conveyed by milk Wilson makes no mention of poliomyelitis. Epidemics caused by milk have been recorded by American workers, and recent bacteriological and epidemiological investigations as to the general mode of infection in this disease add to the probability that these records are authentic. Apart from this there is practically nothing left that could be said on the subject, and what is said is most admirably expressed.

[1] *The Pasteurization of Milk*, by G. S. Wilson, M.D., F.R.C.P., D.P.H. With a foreword by Sir Wilson Jameson, M.D., F.R.C.P., D.P.H. Edward Arnold and Co. (18s.)

BLOOD TRANSFUSION IN THE U.S.S.R.

In watching, through the medium of communiqués and radio, the gigantic struggle between our Russian ally and the common enemy of mankind, medical men in Great Britain have a double concern. First, they share with the ordinary citizen a boundless admiration for the heroism of the ordinary Russian soldier and those who lead him. Secondly, medical men have a special concern in the suffering of Russian men and women and in the ways and means Russian medicine adopts to meet its Herculean task of caring for the sick and the wounded under conditions almost unparalleled in the history of civilization. We hope to be able, from time to time, to make British readers more fully acquainted with the aims and achievements of Russian medicine and Russian doctors, because we believe that one of the surest foundations of trust and friendship between our two great countries will be a close understanding between like professional groups. Understanding does not necessarily imply agreement. In this country doctors on the whole share the view of the brilliant group of men who met in London in 1645 to form the "Invisible College" that later became the Royal Society. At the height of our revolution in the seventeenth century they decided to bar "all Discourses of Divinity and State Affairs" and to confine themselves to "Physick, Anatomy . . . and Natural Experiments." The modern Russian doctor would probably not agree with this view of the men who contributed so much to knowledge under the guiding influence of John Wilkins, the Warden of Wadham College, Oxford. But we may be sure that there is much for us to learn from Russian organization of medical services, and that we in our turn also have much knowledge and experience to give that are of value. The one firm common ground we both share is the fundamentals of the science of medicine—"Physick, Anatomy, Natural Experiments," and on these can we enlarge the community of interest.

On another page in this week's *Journal* we are privileged to print an article on blood transfusion in the U.S.S.R. by Prof. A. Bagdasarov, Director of the Central Blood Transfusion Institute in Moscow. This Institute was founded in 1926, and from that date organization and research have proceeded hand in hand. In 1935, for example, the officially registered cases of blood trans-

fusion numbered 22,000, and by 1940 this figure had risen to 200,000, exclusive of transfusions given on the Finnish front. In 1932 there were only 80 regional institutes, but by 1941 these had increased in number to 1,500. In a country that covers about a sixth of the land area of the world problems of collection, preservation, and transport of blood are indissolubly linked, and to find an answer to these was an urgent matter for scientists in the U.S.S.R. "Nowadays," Prof. Bagdasarov writes, "we consider it an ordinary matter to ship conserved blood by aeroplane over distances of hundreds and even thousands of miles into the most distant corners of the tundra and taiga, and into the steppes and deserts of the south-east regions of the Soviet Union." These, too, are matters of urgency for the British Empire, with its armed Forces spread over the surface of the globe, and a corresponding complexity of medical organization. For us the sea is what land is to the U.S.S.R., and for us the problem of sea transport is added to that of transport by aeroplane.

Prof. Bagdasarov brings forward a number of interesting technical points. He finds that blood conserved in a glucose-citrate solution is suitable for transfusion up to 25 days, or 20 days when transported. There appear to have been no complications in the transfusion of large quantities of group O blood. "During the twelve months of war," he writes, "literally hundreds of tons of blood have been thus applied to wounded men in all stages of evacuation, and with truly tremendous success." Prof. Bagdasarov speaks enthusiastically of plasma as a transfusion agent, stating that it is used in the front line especially in cases of shock and in the treatment of burn cases. The red corpuscles left after the separation of the plasma are, so to say, refloated in a physiological fluid, and in this "modified I.P.K. fluid" erythrocytes stored at 4° to 6° C. show no marked change up to 12 days. Such conserved red cells are transfused to cases of anaemia. Prof. Bagdasarov concludes with some interesting observations on plasma substitutes, and a note on the great army of donors who "have streamed into the numerous blood transfusion institutes and stations." His article will, we are confident, be widely read and with high appreciation of the great service rendered by the organization he directs.

EPIDEMIOLOGY OF THE COUNTRYSIDE

The Milroy Lectures of 1942 add another chapter to those annals of the countryside which Dr. W. N. Pickles is writing for our instruction and enjoyment. Dr. Pickles has much of the literary charm of Austin Dobson, and uses his skill with equal felicity in making a vignette of happy country folk travelling in a motor omnibus to the market town or a graphic story of an epidemiological event.

"I do not think the country doctor, possibly in his ignorance, has any doubt about a true influenza epidemic. Our last visitation was in 1937. Its ferocity lasted but three weeks and the busy life we all expect in a scattered country practice was transformed into a nightmare. There has been no similar epidemic since, but the first three months of most years produce a number of cases of feverish colds. The spread of the epidemic in 1937 suggested a much more infectious disorder. Ten per cent. of the population were sufferers, and all in the short space of three weeks. Two per cent. only were sufferers in 1940 and these were spread over three months. In the epidemic of 1937 the onset of the illness was abrupt. Some will remember the influenza of the early 'nineties when people collapsed in the streets and had to be carried home, and I, myself, saw collapses of this sort at 'divisions' in a ship of the Royal Navy in 1918. Without these dramatic incidents the patients in 1937 did become ill and unfit for work with very little warning. In the illness of 1940 and similar years, the patients tell us that they have been battling for several days but have had to give up at last. As I have seen it, in true influenza there is great uniformity in the symptoms, the patient is prostrate, there is a short unproductive cough, the tongue is foul and coated, the aching in the limbs intolerable, and epistaxis is common. The febrile catarrhs of 1940 and other years I should summarize by saying that the chest symptoms were a great deal more and the general symptoms less alarming."

Dr. Pickles raises the interesting question whether "true" influenza may not be a genuine exotic and our recent immunity due to the closure of the Continent. There was an influenza in England in 1803, after the resumption of the war against Bonaparte, but none again during the war, indeed until 1831, but there was no European pandemic either. Dr. Pickles has seen 202 sufferers from chicken-pox and 87 from shingles in ten years, and contributes interesting examples of the interrelation. On May 6, 1937, a young woman began with herpes, and on May 7 a farmer in a distant village. The young woman, a friend of the farmer's wife, was at a sale a fortnight before and invited to tea; probably the farmer was present. On May 12 (Coronation Day) the farmer was present at the village celebrations; two children sickened on May 26 and 27, and a small epidemic of chicken-pox followed, including one sufferer from herpes. Dr. Pickles could trace two cases of diphtheria to an evacuee, but no other major infectious disease; impetigo, vermin, and scabies were the chief enemies. There were several instances of scabies in native children in homes where there were no evacuees; he thinks common towels in the schools were responsible. One is tempted to go on quoting from this charming paper. Dr. Pickles is happy in his work and his opportunities of contributing new and exact observations on the natural history of disease.

HEPARIN IN PRACTICE

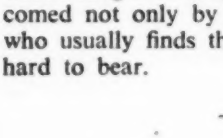
The Scandinavian school of medicine has consistently pioneered the use of heparin, and a symposium[1] on heparin and thrombosis was held in Stockholm in December, 1940. Heparin must be given intravenously. The dosage by intravenous drip to maintain the coagulation time at three times the normal, which is the desirable level for most surgical purposes, is approximately 20 mg. per hour. The dose varies, however, with the condition of the patient, and more heparin will be necessary to raise the coagulation time to a given level after operation than before. To avoid the inconvenience of an intravenous drip and the danger of overloading the heart and the kidneys with excess fluid, some workers have preferred to give four separate intravenous injections of heparin a day, a typical dosage being 75+75+75+125 mg. daily. A further development is Olovson's heparin needle, which is designed to remain in the vein. It has a detachable cap with a rubber membrane, through which the injections can be repeated every four to six hours. Although heparin prolongs the coagulation time, it does not affect the bleeding time, and it can safely be given before or during operations in vascular surgery, such as embolectomy, without increasing the bleeding at operation. On the other hand, there is a very real risk of reactionary bleeding after heparin, and, with the exception of a few special cases, heparin should rarely be administered earlier than four hours after operation. These findings support the hypothesis of Macfarlane[2] that the immediate cessation of

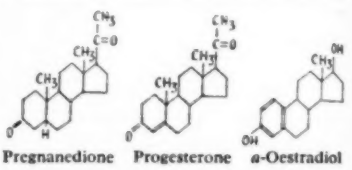
[1] *Acta med. scand.*, 1941, **107**, 107.
[2] *Quart. J. Med.*, 1941, **10**, 1.

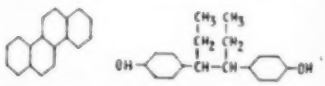
bleeding is brought about by capillary contraction, and that coagulation then seals the wound so that bleeding does not recur when the capillaries relax. Heparin has been used chiefly as a prophylactic against thrombosis after operation. The minimum duration for effective treatment is probably until normal temperature and power of movement have returned and the patient can leave his bed. Forty-eight hours has been proved to be too short, and it is doubtful whether the four days recommended by other workers is long enough. Results have been encouraging, though, on the one hand, heparin has been confined to special cases and, on the other, there has been a fall in the incidence of thrombosis even in untreated cases. Emboli large enough to endanger life can form only in the lower limbs, and Bauer has developed a technique to visualize the veins in the leg by radiographs after the injection of perabrodil. Absence of contrast in the deep veins provides evidence of the presence of a thrombus, and measures can be taken to deal with it before embolism occurs. In established embolism and thrombosis heparin treatment is on a less secure basis, though favourable results have been attributed to it in preventing the extension of the clot. Owing to the large amount of kinase released at the lesion, the therapeutic or medical dosage of heparin is very much greater than the prophylactic or surgical dosage, and the risk of accidents is proportionately increased. Haemorrhage and cardiac tamponade have occurred when heparin was administered in pericarditis, and for this reason the physician may well hesitate to use heparin in coronary thrombosis. In fact, a good deal of careful and controlled work remains to be done before we can assess the value of heparin in treatment. At present a manifest post-operative thrombosis means five to six weeks longer in hospital, and a reduction would be welcomed not only by the surgeon but also by the patient, who usually finds this unexpected setback so tedious and hard to bear.

THE STEROLS, THEIR STRUCTURE AND ACTION

A study of the correlation between the chemical structure and the pharmacological action of a group of compounds may suggest further modifications by which the potency may be enhanced or unwanted side-actions eliminated. Experience has emphasized the wisdom of a cautious estimate of the value of such correlations unless they are made on a very large number of similar compounds, and perhaps in no other field has the relation between structure and function been more obscure than among the sterols. Hans Selye[1] has endeavoured to produce some order out of this chaos by a study of 75 of the hormonally active sterols and their synthetic analogues, together with a very considerable survey of the literature. The importance of the phenanthrene derivatives is shown by the fact that narcotics of the morphine group, bile acids and cholesterol, vitamin D, the sterol hormones, and many carcinogenic hydrocarbons have a phenanthrene nucleus. The subgroup which comprises the sterols consists of modifications of the cholane ring. Selye observed the effect of these modifications upon six different types of action, which he calls folliculoid, corticoid, luteoid, testoid, gonadotrophic, and anaesthetic, and which are independent of one another. He distinguishes between such independent actions and subordinate ones: for instance, all folliculoid hormones can stimulate the development of female secondary sex characteristics, causing enlargement of the uterus and breasts, and hypertrophy of the adrenal cortex as well as vaginal cornification. But any one of the six independent activities may be exhibited by a compound irrespective of its other hormonal properties. Thus pregnanedione has the highest anaesthetic potency yet found, but is devoid of other activity. All sterols with a side-chain of two or less C atoms have some activity, either anaesthetic or hormonal, but the long side-chain derivatives are inert, so far as they have been studied. The commonest pharmacological actions are the anaesthetic and folliculoid, and in fact all but three of the sterols investigated showed some degree of folliculoid activity provided there was not a long side-chain. So the folliculoid and anaesthetic activities do not depend on any great specialization of structure. But the anaesthetic activity may be modified by changes in structure. In the simplest instance this may be due to changes in solubility. Oestradiol has some anaesthetic potency, but its esters, which are more slowly absorbed, have none. Oxygenation, if at either end of the molecule only, increases the anaesthetic effect, but further oxygenation is detrimental. Thus desoxycorticosterone acetate is more active than dehydrocorticosterone. A single double bond in ring A or B does not seriously interfere with the anaesthetic activity, but two or more double bonds in these rings or a double bond in ring D are detrimental. Thus pregnanedione, which is fully saturated, is slightly more active than progesterone, while oestradiol, which has an unsaturated A ring, is inactive. Two chrysopregnene derivatives, with a 6-membered D ring, were also studied, and were found to have both anaesthetic and follicular activity; so evidently the sterol nucleus may be modified slightly without interference with its characteristic properties. But it is more disturbing to find that stilboestrol, which bears no immediate relationship to the phenanthrene group, has an anaesthetic as well as its well-known folliculoid property. It may be that we are dealing here with a member of an entirely different series of compounds, and it would therefore be illogical to apply to it the general laws which have been deduced from a study of the sterols. Further investigation of the stilbene series as well of the sterols may well repay the labour, and emphasize the close association that is now required between the pharmacologist and the organic chemist.







[1] *Endocrinology*, 1942, **30**, 437.

At the invitation of the Managers of the Royal Institution, Sir Henry Dale, P.R.S., has accepted the Directorship of the Laboratories of the Institution, with the Fullerian Professorship, in succession to the late Sir William Bragg. Sir Henry has expressed the wish that his appointment should be limited to a period of three years, so that the Managers may then be free to consider their future policy.

War Medicine Series

The paper printed below is based on a lecture which was one of a series recently given at the British Postgraduate Medical School, Hammersmith

MALARIA IN WARTIME

BY

Sir P. H. MANSON-BAHR, C.M.G., D.S.O., M.D., F.R.C.P.

Malaria in wartime is a large subject, and may be a serious problem. It was so in the war of 1914-18 and probably it will play a part in the present conflict. Then, in the "side shows"—Iraq, Salonika, East Africa, and Palestine—malaria may be said to have been decisive—much more so than enemy action. The admission rates to hospitals which were published in the *Medical History of the War* give impressive figures. In the East African Expeditionary Force there were annually more hospital admissions than troops in the field; that for Salonika was 500 or 600 per thousand troops. Therefore it behoves us more than ever to try to keep in mind what malaria may be like in a war of movement.

There are four different species of intracorpuscular parasites causing malaria, but only two are really important in war; the others do not really matter, just being curiosities. The first causes benign tertian; the second, which may be predominantly important, causes subtertian or malignant malaria.

Unfortunately, scientists have given these parasites many names. I need not bother you with the scientific terms, but I should like to point out how the parasites differ, and how the fevers which they produce also can be distinguished from one another, for there is no doubt that different parasites produce different clinical types of disease. It is of no use at the present time saying that someone has got malaria, and leaving it at that. Research has shown that these fevers differ considerably not only in their clinical appearances but in their treatment also.

The Benign Tertian Parasite

First we have the benign tertian parasite. The ring form becomes attached to the blood corpuscles and then enters them, gradually occupying the whole; but the host cell enlarges when the parasite attains its maximum development as the sporulating form. Moreover, within the substance of the red cell there is produced a degeneration of the protoplasm known as Schüffner's dots, which are peculiar to this and to the *ovale* parasite alone.

Multiple infections of the corpuscle by more than one parasite are rare in benign tertian, although common in subtertian malaria. The sporulating body consists of eighteen to twenty-four spores, and breaks up and sheds the spores (merozoites) into the plasma. It is at this stage that the malaria rigor, or fever, takes place. In the case of the benign tertian parasite this recurs every forty-eight hours. There is another stage, the gametocyte or sexual form, in which the development runs parallel with the former, or asexual, cycle.

There is nothing else quite like a chart showing the classical appearances of the fever. Rigors recur on alternate days at exactly the same time. If the rigor began at 2 p.m. on one day the second rigor will also take place at the same time within forty-eight hours. It was Manson who suggested that any fever which began in the forenoon or early afternoon was more likely to be malaria than anything, more especially if it started with explosive suddenness. The classical features of a malaria attack are the cold, the hot, and the sweating stage, the last taking place when the temperature begins to fall. It is possible to get temperatures of considerable height—104°, 105°, or even sometimes 106° F. When a temperature suddenly shoots upwards so as to cause alarm it is much more likely to be benign tertian malaria than any other kind of fever. Moreover, it falls as abruptly, and afterwards drops to subnormal. The reaction to quinine given intramuscularly may be dramatic, but a subsequent attack cannot be prevented or aborted by one injection of this specific. It just depends upon the stage of development the parasites have attained when the quinine is given whether any further rigors take place.

The classical tertian periodicity is not observed in every case of benign tertian. One must expect fevers, especially in primary infections, which are atypical, resembling tuberculosis or typhoid. Quotidian rigors were formerly held to be due to two generations of parasites running concurrently, but that is not really the case. Rather they are due to the response of the body to a primary infection, because we now know that in experimentally produced malaria we do not get the typical tertian periodicity till the fever has lasted several weeks.

Subtertian Malaria

Benign tertian malaria may be likened to the ordinary rifle bullet, whereas subtertian (*Plasmodium falciparum*) may be likened to a high-explosive shell. The illness the latter produces is different; that is why it is misleading to use the term "malaria" as embracing all these diseases. This parasite does not enlarge the red blood corpuscle in which it lives; and, again, owing to some adhesive properties in the infected corpuscles, they tend to agglomerate, so that development mostly proceeds in the capillaries of the internal organs, and thus the parasite does not freely circulate in the peripheral blood as does the benign tertian. By taking blood slides from the finger one cannot see the complete cycle of development of this parasite in human blood, because a number of stages develop in the sinuses of the spleen, pancreas, brain, intestinal capillaries, and other internal organs of the body. The clinical appearances of the fever depend upon in which organ the maximum multiplication takes place. There is no more protean infection than subtertian malaria. It is a sort of conjurer, continually producing new tricks out of the hat. The parasite at the start somewhat resembles a very small flattened signet ring; next we find it plastered on to the edge of the blood corpuscle, and multiple infections of the cell are common. Irregularity in outline of the corpuscle will be observed, and there are differences in the staining properties of its protoplasm. The sporulating stage takes place almost entirely within the internal capillary vessels; the affected corpuscles agglutinate, forming thrombi, and in the security of their retreat the sporulating form develops. When this last stage is seen in the peripheral blood prognosis is grave, because it means that the patient has been overwhelmed with this parasite.

I will now describe what a blood film looks like in fatal cases such as were frequently encountered during the last war. We see here rapid multiplication of the parasite inside the red cell, and the two bifid nodules of chromatin which usually indicate a severe infection. We can see also large hyaline mononuclear cells which devour defunct malaria parasites. Thus one often finds in subtertian malaria pigmented corpuscles, and nearly always they are mononuclears.

With the subtertian parasite we do not get any dots in the protoplasm of the red cells, but little fissures or holes, which are known as Maurer's dots, or clefts, and they are distinctive.

With regard to the fever, subtertian malaria usually has a quotidian periodicity, but may produce almost any variety of temperature chart. Every now and again there is a sudden drop in temperature, and then it rises once again. In the benign tertian one may see what may be termed a "Salisbury Cathedral" type of chart, but in this case one frequently observes a double rise of temperature—that is, with a dicrotic notch. That is a very important point, and when you see a temperature chart of this description you should always think of this kind of malaria.

I mention this because many years ago I was summoned to a nursing home in London to see a young official who had travelled from West Africa via Barcelona and Paris. There he had partaken of oysters, and was overcome by vomiting and diarrhoea with grave weakness which had been diagnosed as "food-poisoning." With this diagnosis he arrived in London,

and there, every day for three weeks, he produced rigors with a double crisis. He had been examined by several doctors and as many diagnoses had been suggested, till a blood culture was taken, and on a streptococcus being isolated he was given the appropriate serum; but still he did not improve. When I was called in I suggested that he must have malaria, to which the objection was raised that he had no enlarged spleen (but many cases of subtertian malaria do not exhibit this) and that no malaria parasites had been found in his blood. I was informed that thirteen blood examinations had been made already and therefore it was no help to suggest malaria. But in the first blood film I was able to demonstrate three parasites within one corpuscle. He took quinine and atebrin that night, and the fever defervesced and soon he was quite well.

Another curious feature of the subtertian malaria chart is that you may not get any fever at all. It is possible to find people in apparent perfect health walking about with this parasite in their blood, and many return from West Africa with this parasite lying dormant, ready to spring into activity and produce the most dire symptoms at the first opportunity on exposure to cold or exertion.

The Mosquito Problem

Now we come to the mosquito problem. What is an Anopheles, and what are you to do when you see one? The first characteristic of the Anopheles mosquito is its posture; it is said to stand on its head. Actually it does appear to stand in this uncomfortable position with abdomen raised in the air, while all other kinds of mosquito carry it in a horizontal position. This mosquito is usually found in nooks and crannies of the wall and ceiling. In wartime it can be discovered inside canvas tents, and whenever you see an Anopheles mosquito the best thing to do is to "swat" it. There are all sorts of minor marks of differentiation between this and other species. The egg of the Anopheles is one of the wonders of Nature. It resembles a primitive float, and, unlike those of other species, is laid singly. The larva on emerging lies with its body parallel to the surface of the water and has a short respiratory siphon. The Anopheles also has spotted wings, whereas other species generally have not, as exemplified by Ross's provisional description, "the dappled-wing mosquito." Several species of Anopheles in Great Britain have been described; indeed, there are probably just about as many individuals of this genus in Great Britain at the present time as ever, so that it is difficult to know why endemic malaria disappeared from this country. But there are different races even of the same species. Some prefer feeding on cattle or horses, others on humans; and it is only those which prefer biting human beings to biting cattle that are dangerous to man.

Next the elaborate cycle inside the mosquito's stomach must be considered; this, as is well known, was worked out by Ross at the instigation of Patrick Manson. It must always be insisted that had it not been for Manson's original hypothesis this would probably not have been worked out at that time. The copulation of the sexual forms of the parasite takes place inside the stomach cavity of the mosquito, and is known as the sexual cycle. Manson's original hypothesis was that there must be one particular type of mosquito in which this took place; so that time and further work have not upset that original idea—that is, it is only in the genus *Anopheles* that this development may occur.

We have drugs which act upon this parasite in various stages. There are drugs which act upon the sporozoites from the salivary glands and others which act upon the sexual cycle, so that it is becoming more and more important that we should know of these researches because we may in that way eventually find the ideal malaria prophylactic. It is quite obvious that quinine does not fulfil this ideal, because it has been found to have no effect on the sexual cycle and has no influence on the sporozoites. On the other hand, there is plasmoquine, which, although it may not produce such startling results in man, can knock out sporozoites and destroy the sexual stages of the parasites. Then there is atebrin (quinacrine or mepacrine), which acts mainly upon one species (the subtertian), so that we have selective drugs for different stages of malaria parasites.

The Incubation Period

One of the great difficulties in studying malaria is the varying length of the incubation period. In benign tertian malaria it is not unusual for this fever to commence one year to fifteen months after the primary infection; therefore, one commonly meets patients who have been in India and have not had fever there, yet who a year or fifteen months after their return fall sick with an abrupt attack which proves to be malaria.

How long can the malaria parasite persist in the body? The old soldier will assert that he can feel malaria "in his bones." His colonel avers that the only thing is to "drown" it with whisky; he is convinced that he still has malaria thirty or forty years after quitting the Tropics. Are we to believe these stories? I say distinctly they are not true. The parasites have their limited cycle in the body of man. They have their life span just as any other creature. The shortest for subtertian malaria is one year: that of benign tertian is from three to three and a half years at the maximum. The statistics of the Ministry of Pensions show that the benign tertian malaria parasite disappeared within three years from the end of the last war. The quartan parasite is the toughest, because apparently it can hang about in the blood for a very long time. A fatal case was recently reported in London in a child transfused with blood from its father, who had quitted Ceylon twelve years previously. One German observer has even discovered it in the blood nineteen years after primary infection. How are we to explain these long latent periods?

The theory has been developed, backed up by some evidence, that sporozoites do not all immediately enter red blood corpuscles, but lie dormant in the skin, and then infiltrate into the blood stream from time to time, causing malaria. That is a plausible explanation, and may indeed be true.

The Sexual Stage

Next we must briefly consider the sexual stage of the subtertian parasite, or crescent. This looks like a miniature Zeppelin developing inside the red cell, the free edge of which may be clearly visible. It is the black pigment within the parasite that attracts attention, and it was really due to this that the malaria parasite was discovered by Laveran in 1880. While watching one of these parasites, then thought to be dead pigmented cells, he found that when the crescent was abstracted from the blood stream and chilled it underwent an amazing transformation known as exflagellation. This is really a sexual process, and it was due to Manson's explanation of this phenomenon that it was discovered to be a vital process in the life of the parasite. It is not, indeed, as formerly thought, a sort of swan-song of the malaria parasite, but from this amazing act the whole scheme of development of the malaria parasite in the mosquito was formulated.

There are two varieties of crescent—male and female. The latter simply becomes rounded off into a sphere, but the former becomes transformed into this flagellated body. It was Manson, too, who first demonstrated that the flagella broke away, abandoning the defunct body of the parasite, and that each flagellum had a definite structure; but it was McCallum who in 1897 saw the free flagellum impregnating the female. Thus was a vital stage in the elucidation of the life history of the malaria parasite demonstrated.

(This paper will be concluded in next week's issue.)

The National A.R.P. Co-ordinating Committee is arranging a one-day conference at Caxton Hall, Westminster, S.W., on Sunday, Oct. 25, starting at 10 a.m. There will be two parallel sets of lectures—one on organizational topics, including post-raid welfare and war damage, and one on more technical subjects, including anti-gas measures, fire defence, casualty services, and industrial defence. There will also be a show of the latest civil defence films from the Ministry of Information. The speakers include Prof. J. B. S. Haldane, F.R.S., Prof. J. R. Marrack, M.D., and Dr. K. W. C. Sinclair Loutit, former A.R.P. medical officer for Finsbury. Inquiries and applications should be sent to the Conference Secretary, A.R.P. Co-ordinating Committee, Faraday House, 8, Charing Cross Road, London, W.C.2.

TOWARDS CO-ORDINATION OF HOSPITAL SERVICES

The Nuffield Provincial Hospitals Trust and the Ministry of Health are collaborating in surveys, region by region, of the hospital services of England and Wales, and in due course the whole country will be covered. For some months past a survey in London and the surrounding area has been in the hands of Dr. A. M. H. Gray, president of the Royal Society of Medicine, and Dr. A. Topping, deputy medical officer of health of the London County Council, and another in North-West England and North Wales, for which Mr. Rock Carling, senior surgeon to Westminster Hospital, and Dr. T. S. McIntosh, one of the principal regional medical officers of the Ministry of Health, are responsible. More recently Prof. J. A. Ryle, Regius Professor of Physic at Cambridge, and Dr. A. E. Quine, another principal regional medical officer, were appointed to undertake a survey in North-East England. The announcement is now made that a fourth survey, to embrace the greater part of the three Ridings, is to be carried out by Mr. H. L. Eason, president of the General Medical Council, Dr. Veitch Clark, lately medical officer of health for Manchester, and Mr. W. H. Harper, house governor of Wolverhampton Royal Hospital. The survey of yet another large region is expected to begin shortly.

In a recent speech at Oxford, made under the auspices of the Nuffield Trust, the Minister of Health, Mr. Ernest Brown, discussed these surveys and the part they will play in the future co-ordination of hospital services. Inquiries of the kind now proceeding, he said, in the hands of experts of such distinction and experience, and based upon free and informal discussions with those who were tackling in different areas the problem of hospital organization, were more promising than any other course which could have suggested itself. They were designed to promote local consideration of problems having more than a local bearing and to encourage friendly co-operation in their solution. The object of the surveys was not to provide working drawings, but to set up a rich fund of knowledge and experience of which those who would presently have the task of producing such drawings might freely make use.

Object of the Surveys

The surveys will be directed in the first place towards obtaining information about existing facilities, their adequacy and efficiency. The starting-point of all inquiries and planning, said Mr. Brown, must be the needs of the patient: Inquiry will be made into the number and types of beds, the adequacy of the consultative out-patient departments, the range of equipment available, the nature and number of the medical and other professional staff, and the service areas of the hospitals. Other questions, such as methods of administration and accounting, purchase of supplies, record keeping, social work, and, most important of all, finance, will also call for consideration, but these are not relevant to the immediate objects in view.

The facts having been ascertained, those responsible for the surveys will formulate their opinions and advice. In the Minister's view the facts which had been elicited should have general publicity, but the conclusions based upon them, the recommendations issuing from them, should be treated as strictly confidential to the Ministry and the Nuffield Trust. What both the Ministry and the Trust desired was a full and frank report, not a report written with the constraint which was necessarily imposed in the case of a public document. Mr. Brown was explicit as to the procedure to be followed after the reports of the experts had been received by the Ministry and by the special committee of the Trust. Certain general conclusions would be formulated, together with the facts upon which they were based, and these would be laid before local authorities and the governing bodies of voluntary hospitals in each area for their full consideration, both separately and jointly. There would be no question of imposing a ready-made plan or of requiring local action to be taken in accordance with the conclusions emerging from the Minister's consideration of the reports.

The Minister anticipated, however, that in due course legislation would be necessary to give effect to the Government's policy of laying upon the major local authorities, in full consultation with the voluntary bodies concerned, a statutory duty to provide an adequate hospital service. In his speech at Oxford he promised, in the most categorical terms, that that projected legislation would be the subject of the fullest consultation with "all interested parties" before it was introduced into Parliament. The medical profession will welcome and bear in mind Mr. Brown's undertaking. It is to be assumed that it means that the results of the consultation will be available, not merely to amend any measure during its passage through Parliament, but to influence the preliminary drafting of it. It would also be desirable that sufficient time should be given for this consultation to enable representative bodies concerned to gather as wide an opinion as possible from their constituents, so that this legislation, which will be of the first importance to the health of the country, may go forward with the fullest measure of agreement.

Reports of Societies

EARLY DIAGNOSIS OF PHTHISIS

The first Varrier-Jones Memorial Lecture, on the early diagnosis of pulmonary tuberculosis, was delivered under the auspices of the Halton Medical Society by Wing-Commander R. R. Trail at Princess Mary's R.A.F. Hospital, Halton, on Sept. 25. Air-Marshal Sir Harold Whittingham, Director-General of Medical Services, R.A.F., presided, and, before the lecture was given, Sir Walter Langdon-Brown spoke on "Varrier-Jones: the Man and the Idea." The late Sir Pendrill Varrier-Jones was Medical Director of Papworth Village Settlement from its inception until his death in January, 1941. Concluding his tribute Sir Walter said: "Rehabilitation is a word on all our lips to-day, and here it is in being. All honour to the man who achieved this and converted occupational therapy into therapeutic occupation. With tuberculosis again increasing its inroads we may well reflect on this vision that became fact."

Wing-Commander Trail said that except in a disappointingly small percentage of cases we were a very long way from the diagnosis of early pulmonary tuberculosis, and had no cause for complacency. Progress in combating the disease had been made in certain directions during the past 20 years, but detailed analysis of the position to-day in respect of the number of sufferers and the extent of the disease at diagnosis was not so pleasant. Tuberculosis now claimed half the total deaths from all causes at ages between 15 and 24, an age group particularly important in national economy and the one in which the decline in mortality had continued at a slower rate than in any other. The lecturer then quoted L.C.C. figures showing that the best possible tuberculosis services with every modern equipment made no improvement towards earlier diagnosis in ten years, and added that by the extent of disease at diagnosis the majority of these unfortunates were unsuitable for modern methods of treatment and but few survived for 5 years following discharge from sanatorium. They showed a poor economic return and a minimal gain in social happiness for the care and expense afforded them. He attributed this state of affairs to the fact that it was only with the arrival of symptoms, and not always then, that the patient would seek advice. To ask the general practitioner, therefore, to diagnose at a stage prior to the symptoms for which his advice was eventually sought was to ask the impossible. Experience showed that by no means all cases of established phthisis had symptoms, and doctors had perforce to wait until the patient sought advice. Even then diagnosis was often too long delayed.

Mass Radiographs: Figures from the R.A.F.

After reviewing clinical methods whereby indications of tuberculosis could be detected, the lecturer referred to the value of *x* rays. "We have in *x*-ray examination something quite definite to the expert eye, something which, even at its lowest valuation, is a visual indication of abnormality calling for immediate and strict investigation. In other words we have to hand a method of approach to diagnosis which can reverse the present one. The doctor can seek out the patient. He need not wait until the patient seeks him." He then quoted

figures derived from the examination of 40,119 R.A.F. and W.A.A.F. personnel by mass radiography. While the miniature film could weed the abnormal from the normal, for ultimate diagnosis a large film and full clinical and pathological examination were necessary whenever an abnormality was noted. This procedure had been followed in all the cases reported upon, and no case had been considered tuberculous where there was any reasonable doubt of the diagnosis as judged by accepted modern criteria. Despite this, and notwithstanding that all these 40,119 persons had been examined by National Service Boards some six to twelve months preceding mass radiography, and that all the men concerned had had a stricter medical examination within the previous six months with a view to selection for special duties, the results of the examination of these unusually "fit" subjects showed that 65 (or 2.2 per mille) of the 30,130 men exhibited signs of active disease, and that 108 (or 3.6 per mille) showed signs of inactive disease. In the case of the 9,989 women the figures were even worse: 38 (or 3.8 per mille) were in the active disease class, and 56 (or 5.6 per mille) in the inactive disease class. The highest figures per mille occurred in the age groups up to 25–29, the incidence in women being considerably higher than in men. "While the incidence of active disease is practically 1 per 1,000 more for women at the age group 20–24, the incidence for women under 20 is more than double that for men. . . . Similarly among inactive cases, the incidence of disease in women under 20 is four times as great as among men, and one and a half times as great in the age group 20–24, while the percentages approximate to equal in the age group 25–29."

The figures also showed that among the supposedly healthy adolescent and young adult population between 18 and 24 there were some 3 per mille who had unsuspected active tuberculosis and that more than 1 per mille was a potential source of infection because he had, unknown to himself, a positive sputum. The number of the population in these age groups by the last Census, corrected according to birth rates at the end of the last war, was, for England, Scotland, and Wales together, some five millions. The implication was obvious. In these age groups at the present time there were some 15,000 with unsuspected tuberculosis; all of them required at least expert supervision and advice, and many were in need of treatment for a period that could be determined only by close observation. These figures all related to patients without admitted symptoms, and it was a legitimate conclusion that some 25% more cases were found in the early stages of disease by mass radiography as against the present civilian methods of diagnosis.

Necessary Safeguards

The lecturer gave a warning that before any extension of mass radiography could take place much preparatory work must be done, because the adult worker associated *x*-ray examination with disease, and disease was economic disaster. It would be difficult to impress on him the benefits of early diagnosis. Legislation would have to protect him against victimization, loss of employment, and reduced standards of life for himself and for his family. Present circumstances worked against both the patient and the tuberculosis services; they hindered immediate treatment by worry and they militated against good end-results by compelling the quiescent case to return to employment before arrest of the lesion was attained. Wing-Commander Trail concluded that immediate hopes for the future control and treatment of pulmonary tuberculosis must be based on periodic mass radiography of the adolescent population; anything less comprehensive would fall short of the lessons indicated by the experience he had analysed. If they began now on a scheme of examination at school-leaving age and followed by annual review to the age of 30, those age groups on which morbidity and mortality fall most heavily would be covered. Initial cost would soon be offset by the saving of vast sums of money now spent on hospitalization of advanced cases.

A new medical centre for the United States Navy has been founded at Bethesda, Maryland, at a cost of seven million dollars, and will consist of a hospital, medical and dental schools, and a dispensary.

Correspondence

R.M.B.F. Christmas Gifts

Sir,—It is always with a feeling of hesitation, perhaps of fear, that I address this letter to you at this time of the year; hesitation and fear lest I should fail to state the cause effectively to your readers. But in my 25th year of office as President of the Fund and as an old man myself, may I once more appeal on behalf of old doctors and their loved ones that the Christmas Gifts Fund be continued in 1942. A gift of £2 to each of our beneficiaries on Christmas Day to bring some enjoyment, perhaps warmth or an unaccustomed comfort, to homes where every penny has to be considered, is my desire. Will all friends who have helped me in the past do what they can again this year, and will others come forward as contributors to take the place of those who have had to drop out?

All contributions should be addressed to the Hon. Treasurer, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, Putney, London, S.W.15, and cheques should be made payable to the Christmas Gifts Fund.—I am, etc.,

Thomas Barlow,
President.

Working for a Salary

Sir,—In his recent presidential address to the B.M.A. (Sept. 26, p. 357) Sir Beckwith Whitehouse is reported to have said that working for a fixed salary eliminates competition, stultifies individual effort, and therefore is a bar to progress. If Sir Beckwith had contented himself with saying that working for a fixed salary had always been distasteful to him there would have been nothing more to say about it, for *de gustibus non est disputandum*, but he went on to generalize in terms which the facts do not support, and I shall, if you allow me, call evidence to controvert him and to prove that the glitter of gold and the size of one's practice are not the only incentives to honest effort, and that working for a fixed salary need only eliminate competition whose results are as likely to be harmful as beneficial, need not stultify individual effort, and need not be a bar to progress.

Many years ago in a pathology class my fellow students and I sat enthralled while our professor told us the story—and what a story it is—of the four American army doctors, Agramonte, Lazear, Carroll, and Reed, whose courageous and self-sacrificing experiments proved the mosquito transmission of yellow fever and led to a great victory over that disease. These men were working for a fixed salary and were without Sir Beckwith's stimulus of competition, but will he say that their effort was stultified? A few years earlier Major Ronald Ross of the Indian Medical Service, encouraged only by Sir Patrick Manson and spurred on not by the hope of a fatter bank balance but rather by whatever it is that not rarely

> "the clear spirit doth raise
> to scorn delights and live laborious days,"

was fighting a hard battle against official obstruction, the heat of an Indian summer, and other difficulties such as a lack of literature and unfamiliarity with the technique of mosquito dissection, and he did not cease to fight until he had shown that malaria is transmitted by the anopheline mosquito and had charted yet another of the ways of "million-murdering death." Stultification of effort indeed!

A colleague of my own has had sleeping-sickness four times. I shall not name him here as he is a modest man. He had it first as the result of a natural infection contracted in the African bush in the course of his work. It was in the days when treatment was not so sure as it is now, but he made a good recovery. Of the three subsequent infections one was contracted accidentally in the laboratory while handling infected tsetse flies, and the other two were the results of experiments in which he used himself as the laboratory animal in order to find out if certain strains of trypanosomes were pathogenic to man. They were. Three other colleagues allowed themselves to be the subjects of similar experiments, and infected flies were fed on them. Infection followed in one case. All these men had reached the maximum salary in the

service to which they belonged, but *pace* Sir Beckwith they were still men of active clinical and inquiring minds, and there is no evidence that their effort was stultified in any way unless someone will say that it was great foolishness to play the part of a rat or a guinea-pig.

Space will only allow me to mention Sir David Bruce (Malta fever and sleeping-sickness), Sir William Leishman (kala-azar), Sir Robert McCarrison (goitre and nutrition), and Sir Leonard Rogers (cholera, amoebiasis, leprosy), all of whom have added greatly to the sum of medical knowledge in spite of the "handicap" of working for a fixed salary.

I shall call no more evidence in support of my case, though I could summon a host of witnesses from unnamed thousands of members of the salaried medical services, whose daily work and achievement would confound Sir Beckwith Whitehouse even more than the evidence I have already called. Hippocrates once said that where there is a love of mankind there also is a love of the art (of medicine), and I contend that both of these are to be found in at least as great a degree among those members of our profession who work for a fixed salary as among those whose work is stimulated by that spirit of competition which Sir Beckwith Whitehouse says is necessary for the best work.—I am, etc.,

London, W.C.1. H. G. CALWELL.

The Non-touch Technique

SIR,—All surgeons, and in particular those of the present "older generation," will be grateful to Mr. H. A. T. Fairbank (Oct. 3, p. 388) for his timely article in especial relation to the making of an incision down on to a fractured bone. It is nothing short of a tragedy to "open" a "closed" fracture and allow infection to occur. To make such a contretemps still less likely it would be well to drop the archaic, in fact silly, expression "simple" fracture as used in the title of and throughout the paper, except once, when Mr. Fairbank uses the accurate and modern term "closed" fracture. It is more than a quarter of a century since "simple" became "closed" and "compound" became "open" in official nomenclature. All will agree that a "simple complicated" fracture reads as a contradiction of terms, but it is just as wrong to state that a "non-touch" operation on a closed fracture makes it a "compound" one when the fracture merely becomes an open one. Dr. Robert Anderson in his letter in the same issue (p. 406) has fallen into a similar error.—I am, etc.,

London, W.1. W. MCADAM ECCLES.

Breast-feeding

SIR,—Is it not time that breast-feeding should be considered dispassionately? Breast milk is no doubt good, clean, and cheap. Its perfection depends on the mother's health. It is the best milk for the baby if the mother is passive, calm, and patient, qualities which are not always present and less so now than in peacetime. I dislike Dr. Violet Russell's psychological approach (Sept. 26, p. 377). Surely the feed should not be a sensuous orgy for the infant and a sexual experience for the mother? In Nature, the lamb for instance, with its almost brutal butting of the udder, soon makes one realize that he is going for the food supply pure and simple. We are told by our psychological brethren that the impressions and experiences of infancy may last and colour one's neuroses in later years. Is not keeping a baby suckling at a large pendulous breast up to nine months, when the father may be away on Service during the whole of this time, setting the foundation for a type of child or parental fixation of a not too healthy kind? This is only a random thought, and psychotherapists may be able to tell us whether or not some abnormal behaviours have been modified by breast-feeding.

To say, as Dr. David Gilmour does (p. 378), that breast milk is "far and away the best food he can possibly have" is surely an overstatement. If anything, Prof. McNeil's article (Sept. 5, p. 271) proves to me that doctors in general know so little about infant feeding. How many can work out at once the caloric requirement and scheme of feeding for the classical ten-pound infant? If Nature intended women to feed their young successfully, then they should adopt a more reasonable attitude and go on all fours! Could there be a more awkward position for the suckling babe than the arm of its mother to sit on and a large breast to hold on to? I would plead for common sense. Always advocate breast-feeding and be ready, fortified if necessary with the "alphabet," to talk intelligently about it. But if the doctor considers that from some local or general physical or psychological reason the baby and the mother would fare better on artificial feeding then he should be equally competent to advise. If artificial feeding were such a second-rate thing why are there not more miserable children in doctors' families.—I am, etc.,

Towyn. J. GORDON MATHIAS.

Circulatory Overloading after Rapid Intravenous Injections

SIR,—The letter from Mr. Oswald Tubbs on this subject in your issue of Oct. 3 (p. 406) indicates that Prof. Duval's teaching during the last war has been overlooked.

Mr. Tubbs relates the case of a patient who during an operation for lobectomy was given intravenously a pint of normal saline and 3½ pints of blood. Duval in his advice on the treatment of shock in chest wounds is explicit: "One must always avoid, especially in a case of pulmonary haemorrhage, lowering the head and giving subcutaneous or intravenous injections." He does not in his book *Les Plaies de Guerre du Poumon*[1] explain his reasons. But in conversation he pointed out that the reasons were obvious. The object of an intravenous injection is to improve the systemic circulation. In order that the fluid may reach the left ventricle it must pass through the lungs. If the pulmonary circulation is seriously interfered with by injury the right side of the heart will be overloaded and harm rather than good will result. Duval did not distinguish between a slow and a rapid intravenous injection. Mr. Tubbs has described in detail the ill results which Duval assumed that every surgeon would anticipate.—I am, etc.,

Bristol. J. A. NIXON.

Loneliness in Infancy

SIR,—Your annotation on loneliness in infancy (Sept. 19, p. 345) is, to my mind, the most important you have published over a long period. "In infancy loneliness may be not only undesirable but lethal." Doctors who are specifically concerned with physical diseases may think it odd that this particular leader should be picked out for emphasis, but if medicine is to interest itself in the emotional as well as the physical roots of health, simple facts such as those that are stated in this article are fundamental.

The value of long unhurried analyses of a few patients by highly trained psycho-analysts is, sociologically, only in the scientific results obtained, but the application of the advances of our knowledge of human emotional development has direct sociological value. No advance in this knowledge is more significant to-day than the recognition of the strength of the relationship between mother and infant, even newly born.

The sort of experience which Dr. Bakwin describes in the article which forms the stimulus for the leader indeed makes one shudder, and it is a matter for regret that it is as an indirect result of gross human error that your comments appear, instead of as a direct result of good understanding. Nevertheless, these comments are welcome, and the strength of the word "lethal" may perhaps draw attention to the fact that we cannot take mothers from their babies (for war work) without killing infants. The truth is worse than this. We cannot take mothers from infants without seriously increasing the psychological burdens which the next generation will have to bear. We even know that it is the psychotic defectives and the delinquents of the next decade who are being recruited by this, perhaps the worst of the many silly things Hitler is making us do.—I am, etc.,

London, W.1. D. W. WINNICOTT.

Enuresis in Children

SIR,—Dr. J. J. Walls wonders if the aboriginal races are normally enuretic (May 16, p. 622). Recently a Zulu woman brought her child to me for treatment for enuresis. She looked upon it as something abnormal. I quote the following from the section on infancy in a book (O. F. Raum, *Chaga Childhood*, p. 109) which describes a tribe living in Tanganyika Territory: "Enuresis calls forth a variety of measures. The steps taken with smaller children are magical. When a baby is about

[1] *Les Plaies de Guerre du Poumon*, par Pierre Duval. Paris: Masson et Cie, 1917; *War Wounds of the Lung*, by Pierre Duval, Bristol: John Wright and Sons, 1918.

9 months old its mother collects drops of rain in the hoof of a goat or the involutions of a colocasia leaf. This she gives to the child as a medicine, saying, 'Take and drink this drug. It will keep you from wetting the bed!' A bigger child is shown the puddle and scolded. . . . Boys are warned that unless they mend their ways they will not be allowed to sleep in their father's hut. . . . But some children never learn to control urination, though they are scorned for their deficiency and told that this will be an obstacle to their marriage (enuresis is a ground for divorce)."—I am, etc.,

Pietermaritzburg. HELEN F. H. RAUM.

Lister's Antiseptic Technique

SIR,—I think it was in 1867 that Lister introduced the antiseptic method of dealing with wounds in the wards of the Glasgow Royal Infirmary. He used carbolic acid as his antiseptic. Later, I believe, he tried the bichloride of mercury, but reverted to carbolic acid after his colleague, Prof. Crookshanks of King's College, London, reported more favourably on the use of carbolic acid.

Lister reduced the technique of a surgical operation to the utmost simplicity. He taught that a solution of 1 in 20 of carbolic acid, if used for the hands, the sutures and ligatures, the skin of the patient, and for the wound itself, would make the operation safe so far as sepsis is concerned. He even taught that for scalp wounds it was not necessary to remove the hair if carbolic acid was employed, as the hair had a strong affinity for the carbolic acid and became itself an antiseptic dressing. Lister went so far as to say that the solution (1 in 20) of carbolic acid could be made when the surgeon arrived at the operating room, that sutures, knives, etc., could be immersed in the solution, and that they would be then quite safe to use after a matter of 10 to 15 minutes.

Carbolic acid was the antiseptic used in the Western Infirmary, Glasgow, when I was a student in 1885-8. It must be confessed that the results there were not so good as Lister's, chiefly, I believe, because the eminent surgeons (except perhaps Hector Cameron, who had been assistant to Lister in Glasgow) did not whole-heartedly believe in the germ theory of sepsis, and taught in my time that even pus might be laudable, or not laudable, according to its colour, etc. Twice only in the three years I was a student at the Western Infirmary did I see the abdomen opened. One patient, who was operated on for a tubal pregnancy by Hector Cameron (later Sir Hector), recovered; the other died. The surgeons then believed that opening the abdomen was not a justifiable operation.

I believe the surgeons of the future will be forced to employ both methods in operation—the aseptic and the antiseptic technique—the aseptic to disinfect dressings and instruments, and the antiseptic to disinfect the skin of the patient, the sutures and ligatures, and the wound itself before closing it to prevent what I consider a serious defect in aseptic surgery—namely, aerial infection—which, I fancy, is responsible for many of those mysterious deaths that occur two or three weeks after a so-called successful operation.

I may say that, as a G.P., I have used during the last 50 years the bichloride of mercury (1 in 1,000 or 2,000) solution, and it has never let me down. It is the custom now to "débride" all ragged wounds. A boy ripped his foreleg with a bicycle pedal from the knee to the ankle. Having no one to give him chloroform, I swabbed out the wound thoroughly with bichloride of mercury solution (1 in 1,000), and, placing the sutures for several minutes in the solution, I put 12 sutures in the leg. Not a single drop of pus formed around the stitches. This was Lister's method, but with the bichloride of mercury solution instead of carbolic acid.—I am, etc.,

Dornoch. J. T. MACLACHLAN.

Fallacies concerning Rehabilitation

SIR,—Rehabilitation is fast becoming the popular tag in medical circles in this war, but, like similar tags on previous occasions, it is only too apt to become encrusted with misconceptions. Two such misconceptions are already gaining ground. The first is that rehabilitation represents some new method of treatment hitherto confined to a limited selection of mental and orthopaedic patients. The second is that it is essentially a post-hospital problem best tackled in specially equipped rehabilitation centres. I think it is of the utmost importance that both these misconceptions should be vigorously countered.

Rehabilitation is not a new method of treatment at all. It is the application to all types of recent disability of those varied methods of supervised exercise which exponents of physical medicine have advocated for years. What is new about it—at any rate in some circles—is the discovery that these methods are best applied and with greatest hope of success during the very first days after injury or operation instead of following a long period of immobilization; that remedial exercises, muscular drill, weight and pulley tests, occupational therapy, and organized games can all make specific contributions towards the recovery of muscular tone and the restoration of painless joint movement; and the rehabilitation should be conceived as a single process in which all these various methods act in combination and do not follow one another in order of time.

The other fallacy, that rehabilitation should best be carried out at specially equipped centres after the patient's discharge from hospital, is dangerous, as it tends to obscure the essential fact that rehabilitation is as much part of the proper treatment of an injury or illness as is the setting of a fracture, the repair of a hernia, or the dressing of an empyema, and that adequate steps ought to be taken from the very outset, not merely to treat the complaint but also to anticipate and prevent any subsequent disability.

We have now had some months' experience of rehabilitation methods in this emergency hospital, and the advantages of carrying out such measures on the spot instead of waiting for transfer to a separate rehabilitation centre have been most striking. It has meant that supervised physical exercises have been planned for every type of patient and adapted to the particular disability to be overcome; that suitable muscular drill has been carried out in bed on thoracic and abdominal patients, cartilage operations, fractures, and the like; that results are already showing earlier and better union of fractures and more rapid restoration of muscular power and joint flexibility, all varying with the rapidity with which such exercises can be started after the injury; that the whole morale and spirits of the patients have been raised, as they have watched their own progress from day to day and kept their own graphs; and that patients have been leaving the hospital and rejoining their units at an earlier date and in far fitter condition than was previously the case. It is time that rehabilitation methods were accorded a place in the routine treatment of all hospital patients whose illness or injury predisposes to subsequent weakness or disability.—I am, etc.,

HAROLD BALME,
Medical Superintendent,
Pinderfields Emergency Hospital.

Splenectomy in Purpura Haemorrhagica

SIR,—My comment on Dr. Bruce Williamson's letter (Oct. 3, p. 407) must be that if a manual worker is unable to follow his employment or a young woman's life is jeopardized by menorrhagia because of chronic thrombocytopenic purpura, I should feel I had failed in my duty if I did not recommend splenectomy. This is not a question of clinical experiment but of orthodox haematology and therapeutics. Recent data and references are given by N. Rosenthal (*J. Amer. med. Ass.*, 1939, **112**, 101). It is true that the results of operation are sometimes disappointing, but Dr. Bruce Williamson paints far too gloomy a picture.—I am, etc.,

The Radcliffe Infirmary, Oxford. L. J. WITTS.

SIR,—Under the above heading Dr. Bruce Williamson (Oct. 3, p. 407) refers to an article in the *Journal* of Sept. 12 (p. 309) by Prof. Witts. My experience of what is called "essential purpura haemorrhagica" and the effect of splenectomy as a curative measure does not agree with that of Dr. Williamson, as I have previously expressed at meetings of the Clinical Section of the Royal Society of Medicine, and more particularly in an article in your columns on Sept. 7, 1935 (p. 445). In the series of cases which are therein mentioned no case was accepted unless the capillary resistance test was positive, and Mr. Rodney Maingot, who collaborated with me, never regretted this attitude, for, so far as we can ascertain at present, all our cases in which splenectomy has been performed by Mr. Maingot have had no recurrence of symptoms, and it is 16 years since the first 3 were

operated on. We can, however, only give this assurance up to the beginning of the war, but all the patients had promised to write to me if any further symptoms occurred. If one of our patients should show recurrence I should suspect the presence of a splenculus which had grown to full size and advise an operation to verify this statement and to remove the accessory spleen.

Under the heading of "Diagnosis," in the article referred to, I wrote: "One might describe essential purpura haemorrhagica as an idiopathic disease, which may be acute or chronic and intermittent. It is characterized by the appearance of purpuric spots on the skin and spontaneous haemorrhages from one or more mucous surfaces—often resulting in anaemia—in which there are prolonged bleeding time, distinct diminution in the number of platelets, a positive capillary resistance test, generally a normal coagulation time, and a flat blood clot. The differential diagnosis has to be made from haemophilia, aplastic anaemia, lymphatic leukaemia, scurvy, hereditary haemorrhagic telangiectasis, and also from symptomatic purpura and hereditary thrombasthenic purpura. The points of importance are the personal and family history, the clinical history of the case, the performance of careful clinical examination, complete blood investigation, and the various tests mentioned above, such as bleeding time, coagulation time, etc. A proper appreciation of the information afforded should determine the diagnosis." I publish this in full for I feel that some reporters of cases may be alluding to a different condition with certain similarities to the genuine cases.—I am, etc.,

London, W.1. BERNARD MYERS.

Foreign Bodies in the Alimentary Tract

SIR,—I have read Mr. G. O. Chambers's article (Sept. 26, p. 362) with great interest, for he has given details of a most remarkable series of cases, but I trust that his experience is unusual. I have made many *x*-ray examinations on persons who have swallowed foreign bodies and have been frequently responsible for their treatment, but I have known only 5 cases which were followed by perforation, and in all 5 perforation could be attributed to an error in diagnosis or treatment.

Any person who is suspected of swallowing a foreign body should be examined as soon as possible and the exact position of the foreign body determined. If it is held up in the pharynx or oesophagus it should be removed, for though it may pass naturally the patient is in imminent danger of perforation. The patient should never be given an emetic, for such actions as vomiting, retching, or swallowing may cause further impaction. Once the foreign body is shown to be in the stomach there is no immediate cause for anxiety, for the majority of foreign bodies which are swallowed accidentally will pass naturally, as will many of those swallowed by mental defectives. So far as is possible the patient should live under natural conditions. Generally he can be allowed to go home, providing he is kept under daily observation and there is easy access to a hospital. His diet should be unrestricted, for food is the natural stimulant of alimentary movements, and on no account should he be given a purgative, for the irritation so caused may excite spasm and lead to impaction or perforation. In most cases the foreign body will pass through the alimentary canal within a week, but occasionally it may be held up.

Sometimes the foreign body is retained in the stomach. If it is quite free the hold-up is due to inability of the musculature to lift the body towards the pylorus, and this difficulty is usually overcome by keeping the patient lying on his right side, or by total starvation for 24 hours. A hold-up in the antral region of the stomach, the pyloric canal, the duodenum, or the proximal coils of the small bowel for 24 hours suggests impaction, for in these situations the bowel is normally vigorously active. Such a case should be kept under observation by a surgeon. A persistent hold-up in the terminal ileum is unusual, and is most apt to occur if the patient is starved or very constipated, and may be relieved by adjusting the diet or by a small enema. If the body is small enough to enter the appendix it may be retained there for years, but fortunately this complication seldom arises. A hold-up in the colon is usually due to starvation or constipation. The patient should take liberal quantities of vegetable foods but on no account be given a purgative or enema, for so long as the foreign body moves slowly along the bowel the patient is in no danger.

Two of the 5 cases previously mentioned were in children, in whom perforation of the oesophagus occurred, the foreign bodies having been missed owing to the *x*-ray examinations being confined to films of the abdomen. In one case there was perforation of the stomach, the patient having been given a purgative which made him sick; one was due to radium necrosis of the appendix 3 days after hold-up of a 1 mg. radium needle; and one patient had an ischio-rectal abscess from penetration of the rectum after an enema had been given.—I am, etc.,

Radcliffe Infirmary, Oxford. F. H. KEMP.

Narco-analysis for War Neuroses

SIR,—I have been very much interested in Dr. J. L. Clegg's experiences with pentothal narco-analysis (Aug. 1, p. 140) and in comparing them with my own. I am happy to find myself almost in complete agreement with his conclusions, though I "hand him the palm" for enthusiasm, as he has employed the technique in four times the number of my cases over a similar period.

Narco-analysis has, of course, a very limited application, and is to a large extent a confession that other psychotherapeutic efforts, quickly applied, have failed. I only use it or advocate its use in cases where a definite impasse has been reached in endeavouring to overcome a patient's resistance. A therapist's value to a psychological unit depends on his ability to overcome resistance. Dr. Clegg has probably found, as I have, that this ability on the part of his assistants and collaborators, whether as the result of inherent gifts of healing or of extensive postgraduate training, or both, is very unevenly distributed. It is extremely valuable in suitable patients to be able to fall back on a more objective method, by which results are then achieved and much time saved.

Hypno-analysis I have found extremely useful in many cases, particularly in hysterical subjects. My experience with acute and chronic anxiety states, which form a large proportion of our war neuroses, has been identical with Dr. Clegg's. These patients cannot give the concentration necessary for the induction of hypnosis, and are, therefore, more suitable for other techniques, including narco-analysis.

Narco-analysis is not in itself a means of producing a positive transference; it may often produce a negative one. If, however, a positive transference has already been established in early interviews it is not necessarily disturbed by the technique. Patients who have benefited often ask for repeated doses, and persuade their comrades to submit to the treatment.

It has been gratifying in this discussion to have the support of Dr. J. S. Horsley (Aug. 22, p. 230), who originated the term for this technique and was its pioneer in these islands. I share his hope that real progress will be made in the Services towards perfecting it, so that we may advance from the inadequacy of stereotyped methods. To Dr. H. Crichton-Miller (Aug. 22, p. 230) I am obliged for stressing the saving of time effected by this method and for illustrating by case histories how relatively unimportant it is whether hidden material is repressed or merely withheld. From the therapeutic point of view it does not matter whether the patient's amnesia is true or false. The important thing is to achieve "abreaction" and liberate pent-up emotions, be the suppressing or repressing forces conscious, semi-conscious, or unconscious.—I am, etc.,

J. F. WILDE,
Major, R.A.M.C.

Anaemia in Young Adults—Dietetic?

SIR,—May I, a surgeon, with all humility air a medical observation in your columns. During the past year I have had several cases among my out-patients of a fairly severe anaemia arising in otherwise healthy young adults. Most of the subjects were the victims of small accidents—a sprained ankle or cut finger—which brought them to my clinics. Two at least had had a simple appendicectomy. The complaints made were identical in all the cases: dizziness with weakness and aching of the legs. On examination the patients were pale with pallor of the mucous membranes, had a well-marked "bruit de diable" at the root of the neck, and had a blood picture showing an anaemia with a deficit of red cells of one to two and a half millions, a colour index well below 1, and no other significant changes. A short course of iron rapidly cured them all. Although my hospitals are situated in fairly poor districts, all the patients were above the poverty line.

With the exception of two housewives, all were in good jobs and all were on the young side of 40.

I should like to know whether this apparently dietetic anaemia has been noticed elsewhere, and would also like confirmation from the experts of my view that it is a lineal descendant of the old-fashioned "chlorosis" of our fathers. If this is so, and the condition proves to be at all widespread, might I suggest that it arises from the cutting down of our meat ration with a consequent shortage of organic iron of the right chemical constitution in our diet? Further, I would suggest that the Ministry of Food might well consider the rationing of such articles as liver and the starting of a campaign to popularize the consumption of "black pudding" and other blood foods.—I am, etc.,

Wimbledon, S.W.20. A. J. HOBSON, F.R.C.S.

Blood Donors

SIR,—I have read with interest Dr. L. W. Proger's article (Aug. 29, p. 252). In it he fails to acknowledge the help this scheme has had and still has from the large number of voluntary workers throughout the country. It was not until the war had continued for over a year that the Provinces at any rate received any help in their individual and uncoordinated endeavours to maintain an adequate transfusion service. Up to that time most of us had spent much time, trouble, and money in training ourselves and obtaining equipment for our own needs. Since then we have had in this area much help from our regional transfusion centre, but the assistance received from the Ministry in the way of money for expenses and publicity is pathetic. The maximum financial aid allowed is 6d. per donor per annum. This is said to cover clerical expenses. Nothing is received for travelling expenses of donors, refreshment, apparatus, and iron therapy. The work of the medical officers and their helpers has always been voluntary.

It is probably a common experience of us all, as Dr. Proger mentions in his article, that frequently 50% of donors who are asked to attend fail to appear. Such apathy could be counteracted by some full-blooded propaganda by the Government. So far this propaganda has been limited to the issue of a few very indifferent posters. Finally, I would appeal to the medical branches of the Services for the provision of donors. If the giving of blood incapacitates the fit soldier, it surely must have a more adverse effect on the hard-pressed munition worker. Personally, I can see no reason at all why the Forces who have so much interest in this service should not provide a large part of the raw material.—I am, etc.,

E. BIDDLE,
Transfusion Officer,
East Suffolk and Ipswich Hospital.

Sulphonamide Sunlight Eruptions

SIR,—With reference to the article on sulphonamide sunlight eruptions by Capts. R. G. Park and W. M. Platts (Sept. 12, p. 308), I should like to submit to you the following considerations.

Because of structural similarities, sulphonamides are substituted for *p*-aminobenzoic acid, an essential metabolite of micro-organisms, and become germicides consequently. But *p*-aminobenzoic acid is an important constituent of the host's organism as well, especially of the vitamin B complex. Thus sulphonamides belong to the group of poisonous substances interfering with the activity of B complex—e.g., indole, nicotine, and extract of ground fresh fish. Park and Platts emphasize: "In their power to cause an eruption in parts previously exposed to the sun sulphonamides resemble pellagra."

Impairment of B complex is dangerous because parts of the complex are components of enzymes and ferments; nicotinamide is part of cozymase of v. Euler and of the coferment of Warburg; thiamine pyrophosphate (cocarboxylase) is another important coenzyme; riboflavin phosphorylate attached to a specific protein is the yellow enzyme of Warburg-Christian.

We see that the components of B complex control respiration, metabolism, cell repair, cell reproduction, cell proliferation; they may be the pathogenetic source of many diseases of well-known and unknown aetiology, even of psychoses—e.g., schizophrenia—and cancer. That we may become able to turn the wrong cell metabolism to the right way is a hope, but partly a fact, as the reports of Spies (*J. Amer. med. Ass.*, 1939, **113**, 931), Sydenstricker (ibid., p. 1697), Cleckley (ibid., **112**, 210), and many other authors show.—I am, etc.,

Cambridge. G. BROCK, M.D.

Tenosynovitis in Industrial Workers

SIR,—In their article on tenosynovitis (Sept. 26, p. 367) Lieut.-Col. R. E. Flowerdew and Dr. O. B. Bode bring out several points that can bear emphasis. As a works medical officer I see a fair number of these cases every year, and I have noticed the following points which may be of interest to others. With the influx of new workers into my industry tenosynovitis has increased, and I saw 50% more cases in 1941 than in 1940; the number of employees was approximately the same and the processes were unaltered. The tendons affected are usually the extensor ossis metacarpi pollicis and the extensor brevis pollicis, and the movements which produce the complaint appear to be a combination of grasping an object by thumb and fingers, followed by quick pronation, as in closing the lid of a box.

Newcomers to a repetitive, stereotyped job involving these movements are particularly vulnerable, but it is to be noticed that cases crop up among employees who have had years of experience at these jobs, particularly after returning to work following a holiday or sick leave. It is decidedly rare in my experience for a patient who has fully recovered to relapse on returning to the same job. The period of disability in my cases is approximately the same—namely, 7 to 10 days—but it is essential, if the period is to be kept at this figure, to insist on the patient ceasing work as soon as the diagnosis is made. I have never seen a patient recover if kept at the same job that produced the condition, whatever the local treatment adopted.

In my early days I saw many patients get worse, and they had to be put off work; in these cases the recovery period was nearly always much greater. I have no reason to change the opinion expressed by me in the *Practitioner* in 1938—namely, that whatever local treatment is used rest is essential. The treatment I use is to strap the affected wrist with elastoplast, starting with a couple of turns round the hand and working up the wrist until the swelling is covered. This strapping is left on for 1 week after the patient has returned to work. The condition appears to be an inflammatory response to excessive fatigue of various groups of muscles, particularly those crossing the dorsum of the wrists. It also occurs in the anterior tibial group and the tendo Achillis.—I am, etc.,

Cadby Hall, W.14. W. BLOOD.

What is a Closed Profession?

SIR,—Apropos of the very welcome recommendation that nursing should be made a "closed profession," what, exactly, is a "closed profession"? Since any unqualified and unregistered persons are free to practise medicine, surgery, and midwifery provided they do not represent themselves as qualified medical practitioners, sign death certificates, attempt to recover fees in the courts, etc., is there anything to prevent a class of unqualified, unregistered women from "tending sick persons for rewards"—whether under the direction of a medical practitioner or not—notwithstanding the passing of a "Nursing Act": in other words, of standing in the same relationship to the nursing profession as chemists, herbalists, "health practitioners," and the rest, do to the medical profession? Is medicine a "closed profession"? If so, it seems to leak badly.

If the Government takes over all medical practitioners, lock, stock, and barrel, as some seem to hope, will unqualified practice still be permitted or will it be regarded as an infringement? Has the individual any common law right to be treated by an unqualified practitioner if he desires it?—I am, etc.,

Brookwood, Surrey. H. M. STANLEY TURNER.

Operations and Workmen's Compensation

SIR,—In reply to Prof. H. Levy's letter (Sept. 26, p. 380) I think all I need say is that I am fully aware of the nature of the evidence given by the British Medical Association before the Royal Commission on the Workmen's Compensation Act: that I had read the report of the combined medical and legal meeting at the Royal Society of Medicine some months ago;

that I have had practical experience of the interpretation and application of the W.C.A. for the last twenty-five years, not only in the county courts but for twenty years as chief medical officer in London for the South-Eastern and Chatham and later the Southern Railway; that I am fully aware of the great value of the special methods employed in rehabilitation centres; that I hold no brief (as explained in my first letter) for the W.C.A.; and that my sole object in my last letter was to correct what I believe to be rather widespread misapprehensions as to the provisions of the Act.—I am, etc.,

London, W.1. H. GARDINER.

*** This correspondence is now closed.—ED., *B.M.J.*

Scientific Journals for Enemy Prisoners of War

SIR,—I was interested to note the facilities given to prisoners of war in Germany to submit an article on typhus to the *British Medical Journal*. It may not be generally known that in order to prevent mental stagnation among enemy prisoner scientists in this country some efforts are being made to send them unwanted reprints of scientific articles. The authorities have welcomed the scheme, realizing that when world law and order are restored some of these very able men may, by their skill, play some part by scientific discovery to mitigate the physical ills of mankind. J. R. Baker, in acknowledging copies of the *B.M.J.* sent to the Department of Zoology and Comparative Anatomy, University Museum, Oxford, writes: "These are *particularly* welcome, because most of the people concerned are medical men."—I am, etc.,

Kelly College, Tavistock. A. ADAIR.

*** Dr. John R. Baker, writing from Burnt Oak, Kidlington, nr. Oxford, to *Nature* (Oct. 3), appeals for reprints of articles or copies of scientific journals to be sent to him at that address. Donors should give their names and addresses, so that they may receive acknowledgment and a report on the progress of the scheme.—ED., *B.M.J.*

Tongue Sign in Louse-borne Typhus Fever

SIR,—The symptomatology of louse-borne typhus fever described by Capts. C. Donald and P. B. Barker (Sept. 19, p. 333), embodying their experiences in a German prison camp during February, 1942, recalled to my mind a sign to which we in Poland attached some significance. It is the tongue sign, first described by Sterling-Okuniewski in his monograph on typhus. The patient is unable to put out his tongue when ordered to do so, especially in cases where the central nervous system is involved. The reason is perivascular infiltration in the region of the nucleus of the hypoglossal nerve. We found this simple clinical test of great help in differential diagnosis, especially since epidemics of typhus and enteric fever often occur simultaneously in Poland.—I am, etc.,

London, W.1. H. KRYSZEK, M.D.Cracow.

Obituary

M. BODLEY SCOTT, O.B.E., F.R.C.S.ED.

The sudden death of Maitland Bodley Scott on Sept. 29, at the age of 64, came as a great shock to his many medical friends; he had seemed perfectly well when operating at Blandford Cottage Hospital two hours before. He was a native of Bournemouth and had an extensive surgical practice in his home town and in the surrounding districts, particularly in the Blandford area. From Marlborough he went to St. Bartholomew's Hospital, where his father and grandfather had been and to which he sent his eldest son. Scott served on the active staff of the Royal Victoria and West Hants Hospital from 1907 until 1938, when, on reaching the age limit, he was elected consulting surgeon. While assistant surgeon he organized, and was placed in charge of, the orthopaedic department, and while senior surgeon he initiated and supervised the fracture department. He was also honorary surgeon to Blandford Cottage Hospital, in which he took a deep interest: it was largely due to his devoted work and organizing skill that this hospital rose to its present high standard of efficiency. When the last war started he went to St. Malo to organize a Red Cross hospital for the French wounded. When it was taken over by the French he joined the Royal Navy and spent two years in Russia, serving under Commander Locker-Lampson; on his return he transferred to the R.A.M.C. with the rank of major and served in Mesopotamia as surgical specialist in the "Dunsterforce." For the work he did there he was awarded the O.B.E. (Military). At the outbreak of the present war he resumed active work at the R.V. and W.H. Hospital. His organizing ability and unstinted energy played a major part in the Emergency Hospital arrangements, not only in Bournemouth but at Blandford and Fairmile Hospital, Christchurch, where he did excellent work. Despite all these activities he was a regular attendant at the local medical war committee meetings.

Scott, a man of few words, never courted publicity, but the obvious wisdom of his concise observations carried much weight at the many committees on which he sat. He had great manual dexterity and a highly developed mechanical sense; his main hobbies were carpentry and architecture: it is therefore not surprising that it was a pure joy to watch his bone surgery. He never hesitated during an operation; never handled the tissues roughly; never scamped detail or appeared to hurry; yet he was a remarkably quick operator. His loss will be deeply felt by all who came in contact with him; he pulled his full weight to the day of his death. He leaves a widow and six sons, five of whom are on active service with the Forces. A. B. R.

G. A. EWART, F.R.C.S.

We have to announce with regret the sudden death on Oct. 2 at Weybridge of Mr. George Arthur Ewart, surgeon to St. George's Hospital. He was the only son of the late James Cossar Ewart, M.D., F.R.S., for 45 years regius professor of natural history at Edinburgh, and was born on June 1, 1886. He was educated at Cargilfield, Clifton College, Edinburgh University, and Christ's College, Cambridge (of which he was a Scholar), and took his B.A. with first-class honours in the Natural Sciences Tripos of 1909. At Edinburgh he had been awarded the Vans Dunlop scholarship in 1905. Coming to London for the clinical course he soon made a name for himself at St. George's Hospital, and eventually won the Brackenbury prize in surgery, the William Brown scholarship, and the Herbert Allingham surgical scholarship. He qualified with the English Conjoint Diplomas in 1912, and, after holding house appointments, obtained the F.R.C.S.Eng. in 1914. During the last war he served in France with the temporary rank of Major R.A.M.C.(T.) in the surgical division of the 54th (London) General Hospital, B.E.F., and in England at the 4th London General Hospital.

Ewart had been surgical registrar at St. George's before his election to the visiting staff, and in due course became lecturer in operative and practical surgery. During the past 20 years he contributed a number of papers on abdominal disease to the *British Medical Journal* and the *British Journal of Surgery*. He leaves a widow (the younger daughter of the late Sir George Turner, K.C.B., consulting surgeon to St. George's), and one son and two daughters. Shooting was his favourite outdoor pursuit in middle life, but he had been a good long-distance runner and ran cross-country for Cambridge in 1909.

Dr. ANDREW LOWRY MCCULLY, one of the oldest medical practitioners in Huddersfield, died on Sept. 17 in his 71st year. After a very distinguished career at Queen's College, Belfast, he graduated M.B., B.Ch., B.A.O., in 1897, with first place in the first-class honours list at the Old Royal University of Ireland. After settling in practice at Huddersfield he was appointed to the honorary staff of the Royal Infirmary as surgeon, and later medical officer in charge of the male venereal clinic, and on his retirement became consulting surgeon; he had also been obstetric consultant to the Huddersfield Corporation and lecturer for the Central Midwives Board. During the last war Dr. McCully served with a commission in the R.A.M.C. as medical officer of the 1/5th Duke of Wellington's Regiment and specialist surgeon at No. 56 C.C.S. He was a life member of the St. John Ambulance Association and had been corps surgeon to its Huddersfield Division. He joined the B.M.A. in 1906, was chairman of the Huddersfield Division in 1922, and president of the Yorkshire Branch in 1925-6. He was also a past-president of the Huddersfield Medical Society and the West Riding Irish Medical Society.

Medical Notes in Parliament

Medical Services for Miners: Committee's Report

Speaking during a debate on coal supply on Oct. 1, Mr. Tom Smith said an interdepartmental committee had been set up, with himself as chairman, to examine the suggestion in a recent White Paper on coal policy that there should be a medical service for the miners, not merely to deal with the certificates of those who wished to leave the industry, but to deal with rehabilitation and remedial treatment. The report of that committee had been prepared, and he would outline it to the House. It suggested that in each mining region there should be appointed a full-time medical officer, making 8 in the regions and with an additional 1 at headquarters, making 10 in all. At present there was only one full-time medical officer, who had done well but had had an impossible task of surveying 1,900 to 2,000 pits. Each regional officer would survey such things as first-aid treatment and ambulance services. Then there were the investigating and preventive measures concerning occupational diseases and fitness. Nystagmus was on the decline largely because of extra illumination. Of silicosis the House was to hear more in a few weeks. As a result of an inquiry in South Wales, it was to be called pneumoconiosis. In certain pits men suffered more on the average from carbuncles and boils than in other pits. That should be investigated. There was evidence of dermatitis—not limited to one district. The regional medical officer should be a man able to go down the pits and ascertain both causes and necessary preventive measures.

The interdepartmental committee recommended medical inspection of juveniles in accordance with the recommendations of the Forster Committee. At present it would be impossible to carry out the annual inspection of youths in pits up to the 19th year. The committee suggested that at the moment any youth entering the industry should be examined as to fitness for the work. The question of an annual inspection would be discussed with the Mineworkers' Federation. As regards fractures and allied injuries, it was proposed that where a miner, on medical advice, went for out-patient treatment the whole of his expenses should be paid on request. They desired so far as possible to use existing facilities for rehabilitation. They had the offer of one of the best places in Scotland. Where there were no facilities they aimed at rehabilitation centres. These existed at Mansfield, Wigan, and Lanark. They wished this rehabilitation work to be initiated by the Miners' Welfare Commission, whose chairman was convinced it would be pleased to do the work.

Mr. Smith said the figures for medical certificates showed that in one quarter just under 20,000 applications to leave the industry were based on these certificates. About 25% came from men at work and who had remained at work in the industry. Roughly half the cases were from four districts—South Wales and Monmouth, Durham, Lanark, and Lancashire and Cheshire. When a man presented a certificate with an application to leave the industry on medical grounds it was first scrutinized by the lay staff of the Ministry of Labour. If vague it was then submitted to a medical referee, whose decision was final. The interdepartmental committee suggested that certificates relating to miners should be lodged with the regional medical officer, who would scrutinize them and, if need be, get into contact with the man's own doctor or the medical referee. This might deter some doctors from lightly giving certificates. He believed that under the proposed medical service cases could be brought under review where men, while not ill, needed certain treatment to prevent them from having to stay away from work. The report generally would check wastage and prove of permanent benefit to those engaged in the mining industry. Mr. Smith said there was at present a gradual decrease in the accident rate in the mines. In the rush for increased production there must be no weakening in anything which made the mines safer.

The debate was adjourned.

Committee on Medical Schools

On Sept. 29 Sir E. Graham-Little asked the Minister of Health who were the members of the Interdepartmental Committee on Medical Schools, what was its reference, and whether the universities and medical licensing bodies were consulted about its composition and subjects of inquiry before the committee was formed. Mr. Ernest Brown pointed out that names were given in his reply on March 26 to Mr. Jewson. The reply to the second part of the question was "No."

Chiropodists for the Army.—Sir James Grigg, replying to Mr. J. Dugdale, on Sept. 29, said that in the early part of the war regimental foot orderlies were provided for field units and were thought adequate, especially in view of the increasing mechanization of the Army. In view, however, of experience, which suggested that more skilled treatment might be desirable, he was now considering the attachment of fully qualified chiropodists to field medical units.

Diphtheria Immunization.—The returns regarding diphtheria immunization from local authorities at Sept. 30, 1941, showed that between Jan. 1, 1940, and that date the number of notifications in England of diphtheria in children under 15 was approximately 51,700, and that approximately 2,380 of these children had received a course of immunization. In the same period the total number of children immunized under local authority arrangements in England was approximately 1,889,000. By the end of June, 1942, this number had increased to close on 3,000,000.

Price of Insulin.—On Oct. 1 Mr. Tinker alleged that hardship was caused to diabetic patients by the increased prices of insulin and needles. Mr. Brown replied that prices had increased, but having regard to the free provision of insulin and the necessary appliances for administering it under the National Health Insurance and Public Assistance schemes, he did not think there was a case for any special measures to prevent any increases warranted by the conditions of production.

The Services

Temp. Surg. Lieut. M. P. Martin, R.N.V.R., has been awarded the D.S.O., and Prob. Temp. Surg. Lieut. T. P. Storey, R.N.V.R., the D.S.C., for gallantry, daring, and skill in the combined attack on Dieppe, and Acting Temp. Surg. Cmdr. W. B. D. Miller, D.S.C., Prob. Temp. Surg. Lieut. J. G. C. Murray, and Temp. Surg. Lieut. R. Wadia, R.N.V.R., have been mentioned in dispatches.

Capts. L. G. Alexander and F. W. Hayter, R.C.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in the combined attack on Dieppe, and Lieut.-Cols. K. A. Hunter and G. L. M. Smith and Capt. B. Brachman, R.C.A.M.C., have been mentioned in dispatches.

The King has awarded the R.N.V.R. Officers' Decoration to Acting Surg. Cmdrs. J. B. Hutchison and D. W. Bawtree, R.N.V.R.

The King has conferred the Efficiency Decoration of the Territorial Army on Col. (Acting Brigadier) D. S. Middleton; Lieut.-Col. J. R. McDonald, M.C.; Majors (Temp. Lieut.-Cols.) A. L. Crockford, M.C., F. N. Foster, E. G. R. Grant, P. J. Stokes, and M. L. Sutcliffe; Major (Acting Lieut.-Col.) K. S. Roden; Majors A. O'Hanlon and H. R. Paterson; and Capt. (Temp. Major) S. P. Wilson, R.A.M.C.(T.A.).

CASUALTIES IN THE MEDICAL SERVICES

The *University of London Gazette* dated July 24 contained a Roll of Honour. Among the medical officers listed there are three whose deaths have not been recorded in this column—namely, Surg. Lieut.-Cmdr. J. G. Slimon, R.N., Surg. Lieut. G. L. Cutts, R.N.V.R., and Lieut.-Col. J. J. Rooney, I.M.S., all of whom had been students of Guy's Hospital.

Surg. Lieut.-Cmdr. James Gillespie Slimon was killed by a train in Dec., 1939, while on leave. He graduated M.B., Ch.B. at the University of Glasgow in 1929. After holding the post of health officer at Kuala Lumpur in the Federated Malay States he entered the Royal Navy as surg. lieut. early in 1934 and was promoted in Jan., 1939.

Surg. Lieut. George Lambert Cutts died, following an operation, on June 6, 1940. He took the L.D.S. in 1914 and qualified M.R.C.S., L.R.C.P. in 1919, after which he was house-surgeon at Guy's and at the Queen's Hospital for Facial Injuries at Sidcup. He obtained the D.P.M. in 1925 and entered the L.C.C.'s Mental Hospitals Service, becoming successively A.M.O. at Bexley and at Long Grove, Epsom, and deputy medical superintendent of Friern Hospital. He rejoined the R.N.V.R., in which he served as surgeon-probationer in the war of 1914-18, soon after the outbreak of the present war.

Lieut.-Col. John Joseph Rooney, I.M.S., who died on April 5, 1941, was born on Jan. 27, 1890, and graduated M.B., B.Ch., B.A.O. of the National University of Ireland in 1920. He entered the I.M.S. soon afterwards, and was promoted capt. in 1923, major in 1929, and lieut.-col. in 1937. The earlier years of his service were spent at Lahore.

Wounded.—Capt. J. L. M. Whitbread, I.M.S.

Prisoners of War.—Col. R. D. Davy, M.C., Capt. D. Foskett, R.A.M.C., Capt. J. Gendle, R.A.M.C., Capt. R. G. Main, R.A.M.C., War Subs. Capt. H. J. McPherson, R.A.M.C., War Subs. Capt. A. P. Norman, R.A.M.C., Lieut. L. W. Ashton Rose, I.M.S., War Subs. Capt. N. C. Rogers, R.A.M.C., Lieut. A. W. B. Strahan, I.M.S., Capt. J. J. Woodward, I.M.S.

Missing.—Lieut. D. Christison, R.A.M.C. (*corrected announcement*), Surg. Lieut.-Cmdr. D. N. Ryalls, R.N.V.R.

Missing, Believed Prisoners of War.—Temp. Lieut.-Col. G. F. A. Condon, I.M.S., Temp. Major S. G. O'Neill, I.M.S.

Universities and Colleges

UNIVERSITY OF OXFORD

The King has approved that Arthur W. M. Ellis, M.D.Toronto, F.R.C.P.Lond., be appointed Regius Professor of Medicine in the University of Oxford on the retirement of Sir E. Farquhar Buzzard, Bt. Dr. Ellis until lately held a professorship of medicine in the University of London as Director of the Medical Unit of the London Hospital. He was appointed in March last by the Medical Research Council to a whole-time position on its scientific staff as Director of Research in Industrial Medicine.

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*Part II*: R. A. D. J. Bernhardt, A. B. Donald, H. R. Holmes, B. Kounine, A. Preiss, R. A. Williams, H. Wormald

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* substantial increases were recorded in the incidence of measles 358, scarlet fever 81, acute pneumonia 58, and dysentery 53 cases; for whooping-cough and diphtheria the notifications were 212 and 71 fewer.

Generally, the variation in the incidence within the counties was small. London and the south-eastern counties were responsible for the rise in scarlet fever. Lancashire, with 35 fewer cases, was the only county that showed a notable difference in the incidence of diphtheria; Yorks West Riding supplied the only local noteworthy change in the incidence of acute pneumonia, a rise of 37, and for whooping-cough 79 fewer cases.

The trend of measles to increase is not yet general throughout the country, being mainly in the northern section of the country; in the south the fall has not been checked. The largest increases during the week were recorded in Yorks West Riding 154, Leicestershire 92, Lancashire 83, and Warwickshire 61.

Owing to a duplication in the returns for enteric fever during the week ending Sept. 12 the published return was incorrect. The figure should have been 19 and not 37.

In *Scotland* the notifications of both measles and scarlet fever were 43 more than last week's total. While the higher incidence was due to a small general rise in the case of scarlet fever, the trend of measles was affected by only a few areas. The largest of the local increases in measles were those of the city of Aberdeen and the town of Paisley.

Dysentery

The number of cases of dysentery in England and Wales has increased for six consecutive weeks, and the 237 cases recorded during the week was the largest weekly total since the spring of 1938. No fresh outbreaks of any size occurred, and the increase of 53 cases this week was mainly due to an extension of the outbreaks which began last week in Essex and Yorks North Riding. In the former county notifications rose from 3 to 39, and in the latter from 8 to 25: 15 cases were reported from Hants, Droxford R.D., where the outbreak also began last week. In Oxfordshire and Norfolk, where the outbreaks have persisted for a month, there were 11 and 40 cases respectively during the week.

Small-pox in Fife

Small-pox has appeared in Fife. The cases were at first thought to be chicken-pox, and in view of this a warning has been issued by the Department of Health for Scotland to the local authorities that a thorough examination of all cases of chicken-pox should be made and any doubtful cases brought to the notice of the local medical officer of health. According to Press reports 10 cases have occurred in Methilhill and there have been 2 deaths.

Returns for the Week Ending October 3

The notifications of infectious diseases in England and Wales included the following: scarlet fever 2,423, whooping-cough 845, diphtheria 860, measles 3,801, acute pneumonia 508, cerebrospinal fever 61, acute poliomyelitis 33, dysentery 232, paratyphoid 5, typhoid 6.

No. 38

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 26.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	1942 (b)	1942 (c)	1942 (d)	1942 (e)	1941 (Corresponding Week) (a)	1941 (Corresponding Week) (b)	1941 (Corresponding Week) (c)	1941 (Corresponding Week) (d)	1941 (Corresponding Week) (e)
Cerebrospinal fever	70	5	13	2	—	121	4	34	4	5
Deaths		—	1				—	1		
Diphtheria	807	43	209	64	23	957	40	237	15	19
Deaths	21	—	4	3	—	23	1	7	2	—
Dysentery	237	13	41		—	102	9	68	—	—
Deaths		—	—	—	—		1	—	—	—
Encephalitis lethargica, acute	2	—	—	1	—	6	—	—		—
Deaths		1	—				—	—		
Erysipelas		—	56	8	1		—	45	7	3
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				89						
Deaths	70	10	15	20	6	38	1	13	17	11
Measles	3,356	271	170	15	10	612	18	14	23	—
Deaths	2	—	1	—	—	1	—	—	—	—
Ophthalmia neonatorum	112	3	18		1	76	3	7		—
Deaths										
Paratyphoid fever	13	1	—			125	6	11		
Deaths	—	—	—		—	—	—	—		
Pneumonia, influenzal*	459	32	10		—	434	15	2		—
Deaths (from influenza)	6	—	—	—	1	8	—	—	—	1
Pneumonia, primary			125	11	2			140	3	
Deaths				3	6				4	2
Polio-encephalitis, acute	7	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	32	1	—	24	—	28	1	8	3	1
Deaths		—	—				—	—		
Puerperal fever	2	2	11	2	—	—	4	14	3	—
Deaths										
Puerperal pyrexia	159	7	15		—	134	4	15		3
Deaths										
Relapsing fever	—	—			—	1	—			—
Deaths										
Scarlet fever	1,963	135	394	54	41	1,140	34	195	48	22
Deaths	—	—	—	—	—	1	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever†	9	—	6	12	6	27	1	4	10	4
Deaths	—	—	—	—	—	—	—	—	—	1
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	938	77	21	56	3	2,289	196	106	45	30
Deaths	13	2	1	1	—	14	1	2	2	—
Deaths (0–1 year)	318	27	76	36	23	272	19	69	25	19
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,549	461	523	164	114	3,429	427	512	164	94
Annual death rate (per 1,000 persons living)			11·8	10·9	‡			11·2	10·9	‡
Live births	5,901	673	809	346	258	5,079	460	812	374	172
Annual rate per 1,000 persons living			16·7	23·1	‡			16·5	24·8	‡
Stillbirths	223	23	27			170	14	37		
Rate per 1,000 total births (including stillborn)			32					44		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

The second Moynihan Memorial Lecture will be given by Sir Hugh Lett, Bt., ex-President of the Royal College of Surgeons of England, in the Riley-Smith Hall of the Students' Union building, University of Leeds, on Thursday, Oct. 29, at 3 p.m. Subject: "William Hey and After." Members of the medical profession are cordially invited to attend.

The first Bacot Memorial Lecture of the Lister Institute of Preventive Medicine, entitled "Bacot's Work on the Louse and Some of its Recent Developments," will be given by Prof. P. A. Buxton at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, on Friday, Oct. 30, at 3 p.m.

At the meeting of the Royal Medico-Psychological Association to be held at 11, Chandos Street, W., on Wednesday, Oct. 21, at 10.30 a.m., there will be a symposium on the incidence of tuberculosis and dysentery in mental hospitals.

A meeting of the South Yorkshire Section of the Institute of Chemistry will be held at Sheffield City Hall on Thursday, Oct. 22, at 2.45 p.m., when there will be a discussion on "The Chemist and Industrial Health," to be opened by Dr. F. S. Fowweather and Dr. M. W. Goldblatt.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, Oct. 22, at 4.30 p.m., when Lieut.-Col. W. W. Mansfield will read a paper on "Disguise in Handwriting."

The next meeting of the North-Western Tuberculosis Society will be held at the Tuberculosis Offices, 352, Oxford Road, Manchester, on Thursday, Oct. 22, at 3 p.m., when Wing Cmdr. R. R. Trail will give an address on "Mass Miniature Radiography," illustrated by lantern slides.

The National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality is arranging a conference on mothercraft teaching and education for parenthood, to be held on Thursday, Oct. 22, at 2 p.m., at Carnegie House, 177, Piccadilly, W.

A special *x*-ray unit of the most modern type and costing £3,000 is to be sent to Leningrad by the Joint Committee for Soviet Aid, at Madame Maisky's request. The honour of presenting this unit to Leningrad has been given to the Civil Service Clerical Association, who have sent £6,000 to the Joint Committee for its mobile *x*-ray unit campaign.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The Editor, British Medical Journal, B.M.A. House, Tavistock Square, London, W.C.1.

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QUERIES AND ANSWERS

Infra-red Radiation for Migraine

Dr. E. Venn Claydon writes: A patient of mine some time ago had a motor accident, one result of which was a marked increase in frequency and severity of attacks of migraine which had dogged him for 20 years. I have recently been giving him infra-red radiation to the back of the neck for "fibrositis." The patient reports a renewed feeling of well-being, absence of attacks, and is able to do strenuous brain work with far less fatigue than formerly. Is this a known treatment for migraine and would it be safe to irradiate the head also?

Aspirin for Asthma

Dr. B. Baneth (Worthington) writes: In your issue of Sept. 19 there was an inquiry about the curative properties of aspirin in asthma. Aspirin is well known as an anti-allergic drug and was included in one of Prof. Lichtwitz's prescriptions for all kinds of allergic diseases, especially for asthma. There are quite a number of authors who consider that the well-known curative effects of aspirin are due to its anti-allergic properties only. In fact, to my knowledge aspirin alone is not frequently used as a remedy for asthma, as in some allergic patients it may act as a powerful allergin with severe consequences; I remember a very unpleasant and persistent urticaria after its use. But the same may happen with other drugs efficacious in asthma. The good effect of aspirin in an attack of asthma is no surprise for the student of allergy.

LETTERS, NOTES, ETC.

A Maternity Service Scheme

Dr. Robert Sanderson writes: May I briefly call attention to a suggestion in Dame Louise McIlroy's address (Aug. 15, p. 184) that efficient voluntary maternity services should be subsidized. Take, for instance, the Brighton and Sussex Maternity and Women's Hospital. This is an old charity. William IV was the first subscriber. As to its efficiency the rough figures for the year 1941 are as follows: 1,400 deliveries (600 in hospital; 800 in the various districts of Brighton and Hove). There were 60 Caesarean sections. There was one maternal death. That this charity is in a chronic condition of insolvency is a reproach to the community and the country.

Diagnostic Sign in Ruptured Peptic Ulcer

Dr. V. E. Badcock, *M.C.* (Cornhill-on-Tweed), writes: In the *British Medical Journal* of Feb. 2, 1918, Prof. R. J. Willan drew attention to a helpful diagnostic sign in ruptured digestive ulcers. This sign, though not always present, does not appear to occur in any other acute abdominal condition and is particularly useful in an atypical case. It is of such diagnostic value that I feel it deserves to be better known than it is. The sign consists of a transverse ring or band of constriction across the abdomen at the level of the lower margin of the ribs and extending into the flanks at either side. It is just as if an invisible string was stretched tightly round the abdomen, dividing it into an upper and a lower portion. Prof. Willan described two cases of ruptured pyloric and gastric ulcers where this sign was prominent, and I have now seen it in my last three consecutive cases of ruptured duodenal ulcers.

MEDICINE 100 YEARS AGO

Extract from a leading article in the *Provincial Medical Journal* for October 15, 1842:

"To one of the most salubrious and delightful spots in England—the village of Malvern—has lately repaired one of the advocates of the water system, where he conducts an establishment upon the same plan as that of Priessnitz, in Germany; and, attracted by the *reports* of wonderful cures, thither flock 'the halt, the maimed, and the blind.' The same assurances of success are alike held out to all—to the gouty and well-fed alderman—to the poor, wan, and dejected creature, rapidly sinking beneath the strides of consumption—to the little infant, 'mewling and puking in the nurse's arms'—to him who has attained 'second childishness and mere oblivion'—to the unfortunate being who has never heard from his birth the sweet and varied sounds of nature, or whose heart has never been gladdened by the blessed light of day. That this water doctor performs many cures we do not for a moment doubt. But, on the other hand, we do not hesitate to affirm that the wholesale adoption of this remedy in indiscriminate cases has and will continue to be productive of the most serious and extensive mischief. And, in the first place, if we look to the instances in which hydropathy makes its most frequent cures, they will be found to be old chronic cases, for which the medical man previously in attendance recommended strong exercise, fresh air, bathing, nourishing and wholesome diet, with entire abstinence from all beverages of an exciting or inflammatory nature. But, the fact is, a physician finds it a very difficult thing to get his patients to do this. It causes too much trouble or expense, and they think that, in all probability, they shall recover without the adoption of such rigorous measures. The disease, however, is of a nature which will not admit of this; and so, if they do not get worse, at least they make no advances towards recovery. Then they hear of the *wonderful cures* of the water doctor, and away they go to his establishment. Here they are compelled to do that which was before recommended, for it is part of the system which builds its success solely upon a rigorous application. They rise early, walk the Malvern hills before breakfast, return home with the skin in a warm, healthy glow, eat sparingly, and drink nothing but water. Can anything be more beneficial than this to a person who has been a martyr to the gout, or to one who, from imprudence and intemperance, is frequently suffering from indigestion? Certainly not. But from its efficacy in one class of diseases is not to be assumed its efficacy in all."

*** At the time the article from which the above extract is taken was published, hydropathy was very much in vogue. In the *Provincial Medical Journal* of September 24 and later, Dr. Charles Hastings, who was secretary of the Provincial Medical and Surgical Association (forerunner of the B.M.A.), was strong in his condemnation of the indiscriminate use of "the water cure," beginning one of his articles as follows: "It may well be doubted whether there is any country on the face of the earth in which quackery is so successfully followed as in rich and credulous England."